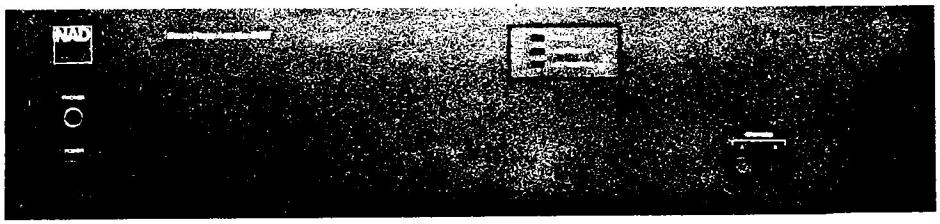
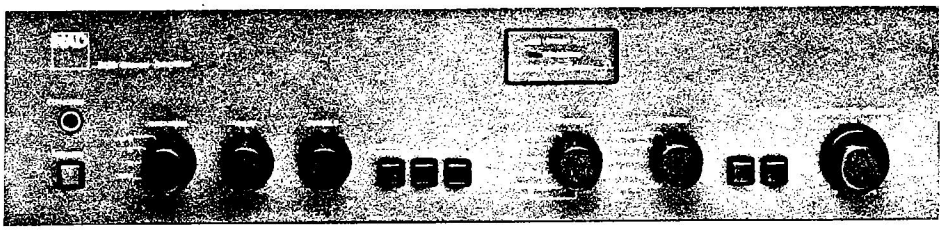
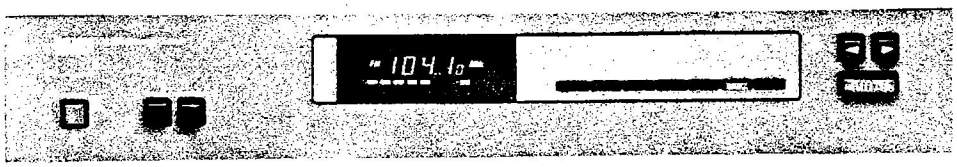
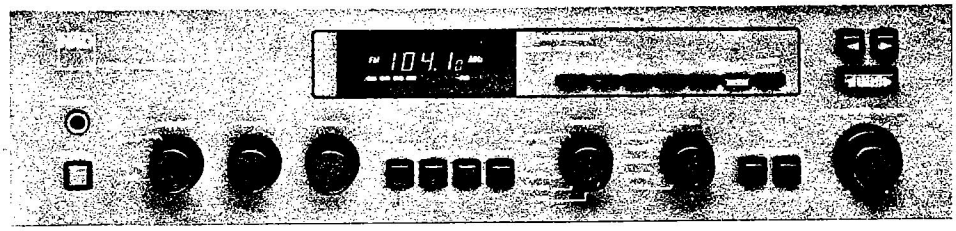
NAD SERVICE MANUAL









MODELS

2150

3150

4150

7150

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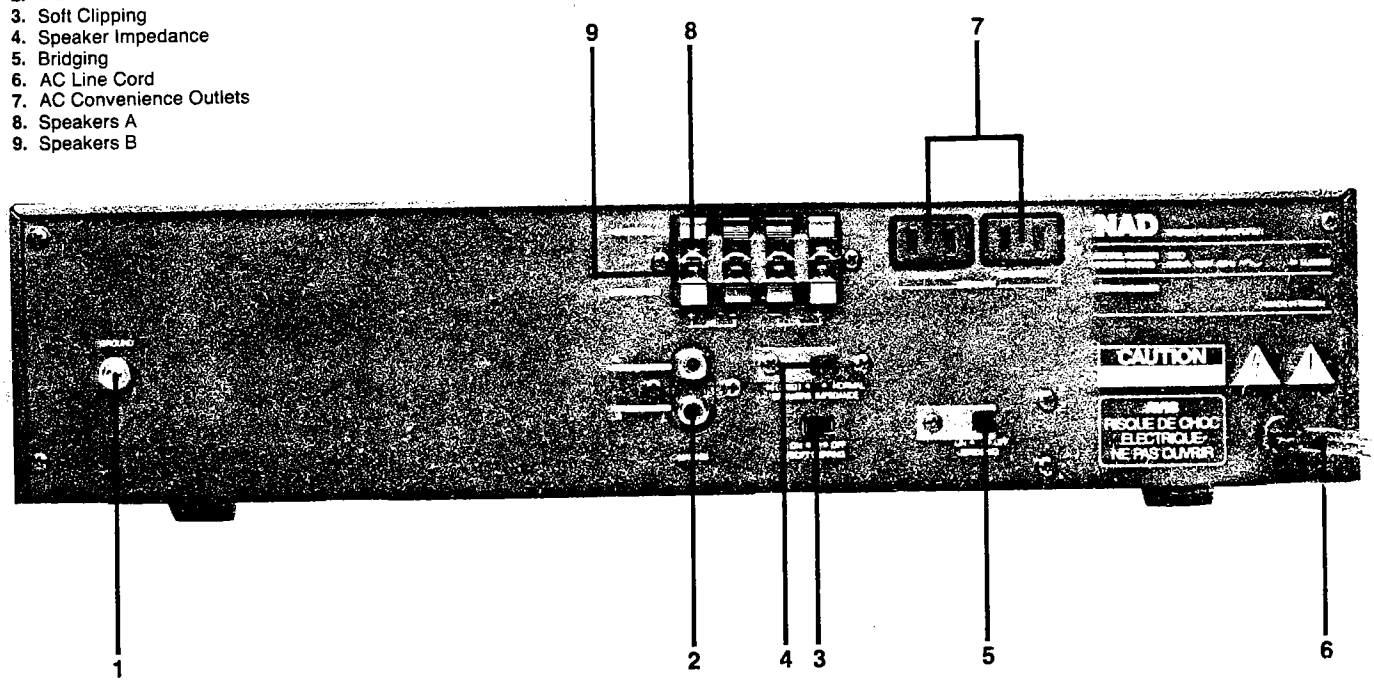
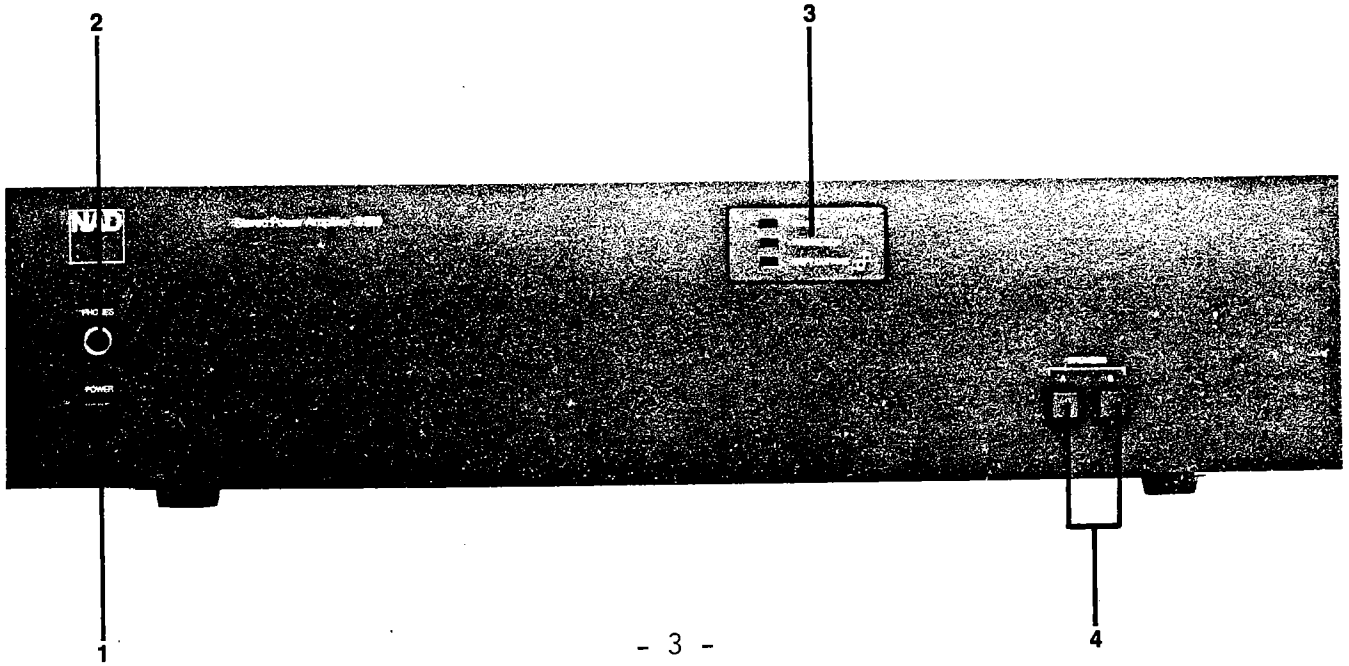
2150 FRONT/REAR VIEW

1. Ground
2. Main in
3. Soft Clipping
4. Speaker Impedance
5. Bridging
6. AC Line Cord
7. AC Convenience Outlets
8. Speakers A
9. Speakers B

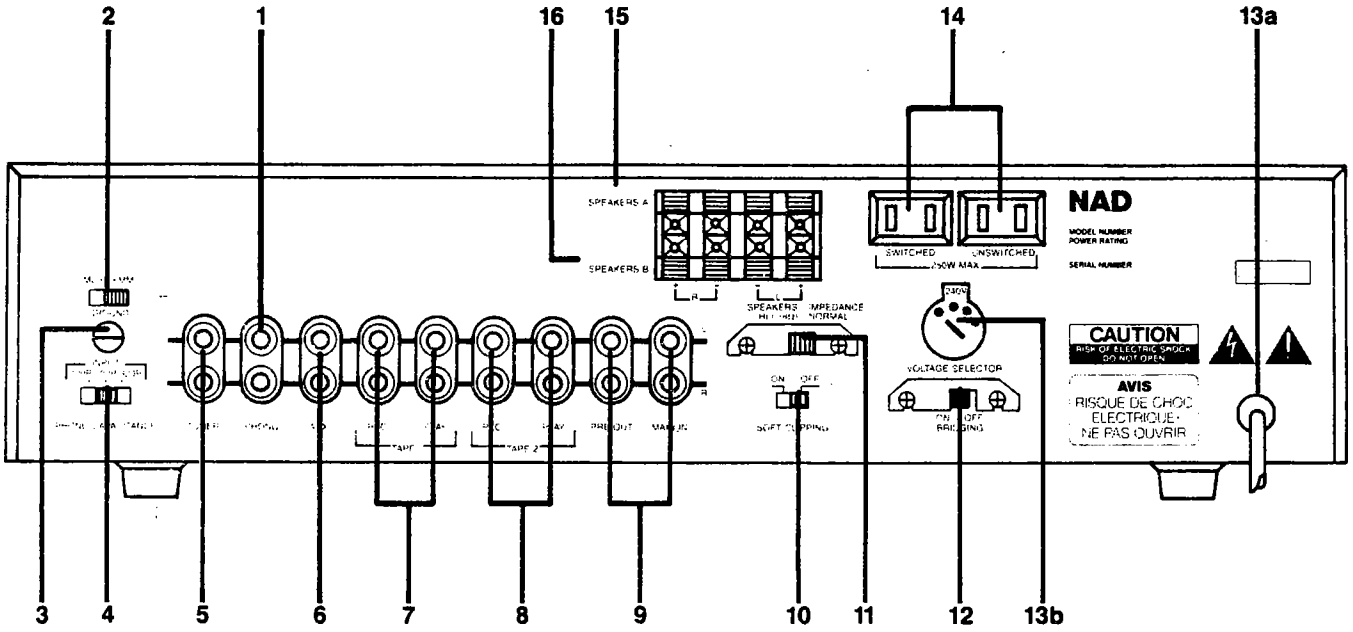


1. Power
2. Phones
3. Status Indicators
4. Speaker Selector

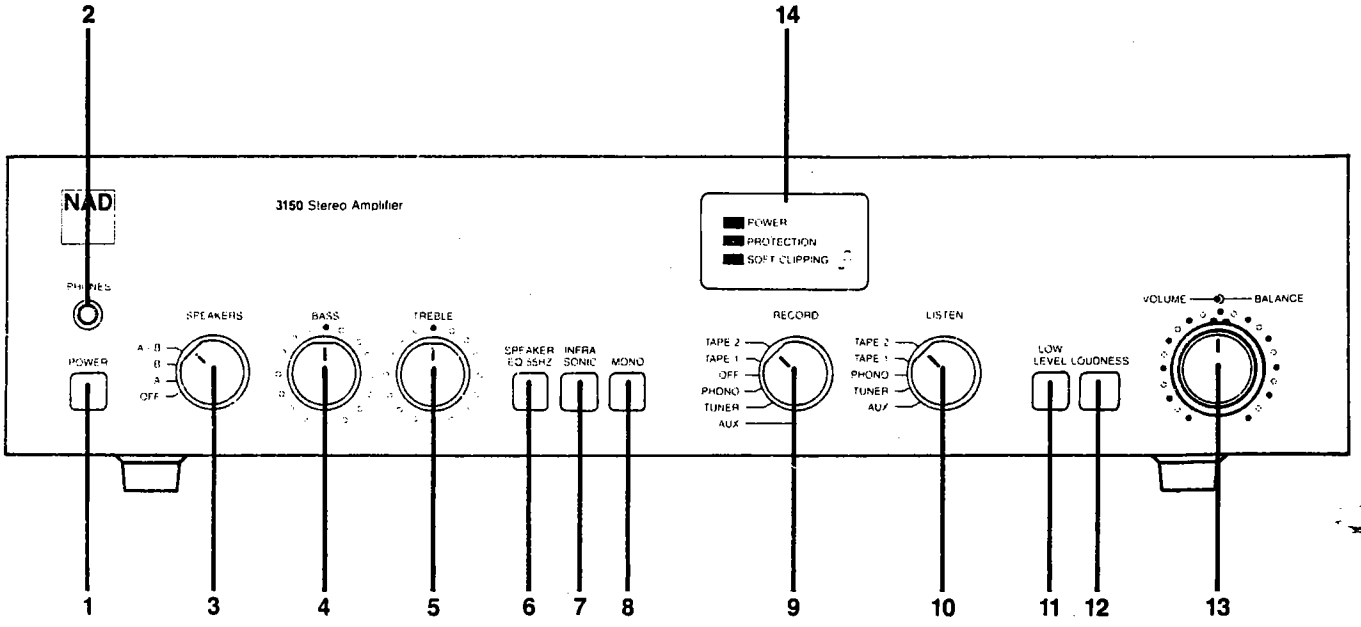


3150 FRONT/REAR VIEW

1. Phono Input
2. MM MC Selector
3. Ground
4. Capacitance Selector
5. Tuner Input
6. Aux Input
7. Tape 1 Rec/Play
8. Tape 2 Rec/Play
9. Preamp Out, Main in
10. Soft Clipping
11. Speaker Impedance
12. Bridging
13a. AC Line Cord
13b. Voltage Selector (Not in U.K. model)
14. AC Convenience Outlets
15. Speakers A
16. Speakers B

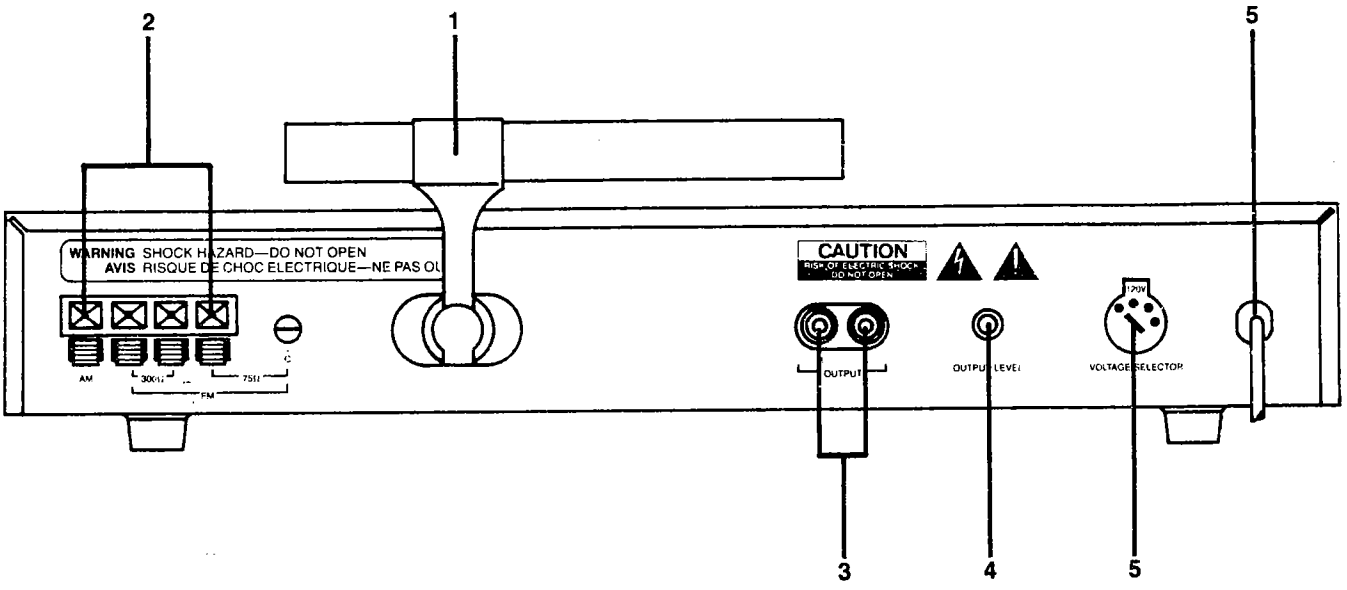


1. Power
2. Phones
3. Speaker Selector
4. Bass
5. Treble
6. Speaker EQ
7. Infrasonic Filter
8. Mono
9. Recording Selector
10. Listen Selector
11. Low Level
12. Loudness Compensation
13. Volume/Balance
14. Status Indicators

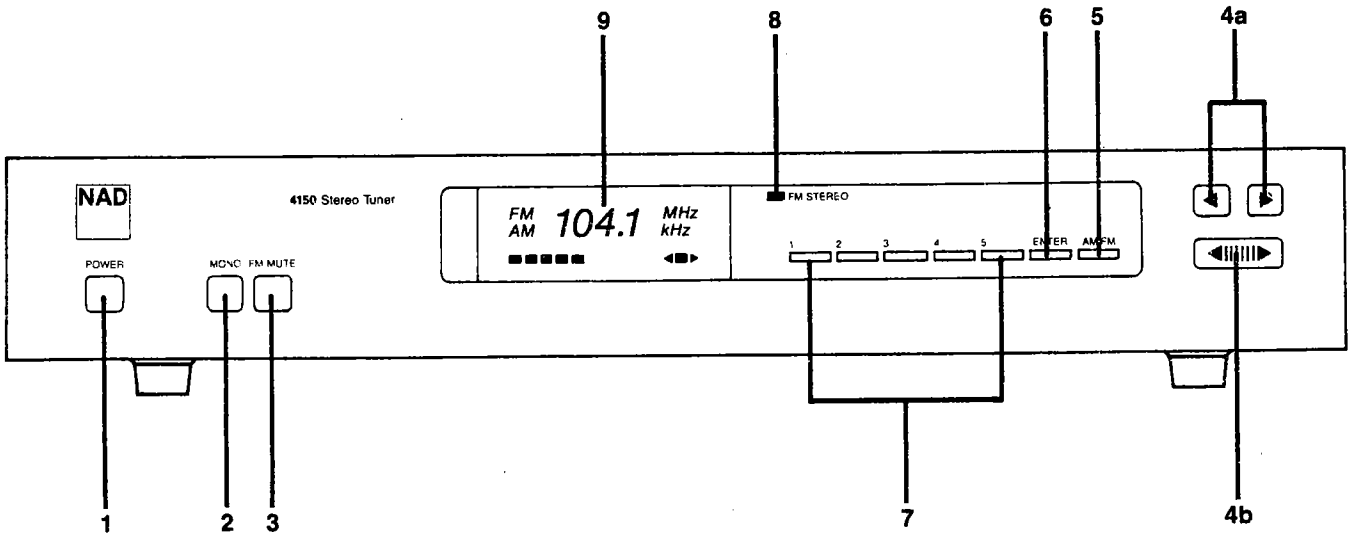


4150 FRONT/REAR VIEW

1. AM Bar Antenna
2. Antenna Terminals
3. Audio Output
4. Output Level
5. AC Line Cord and Voltage Selector

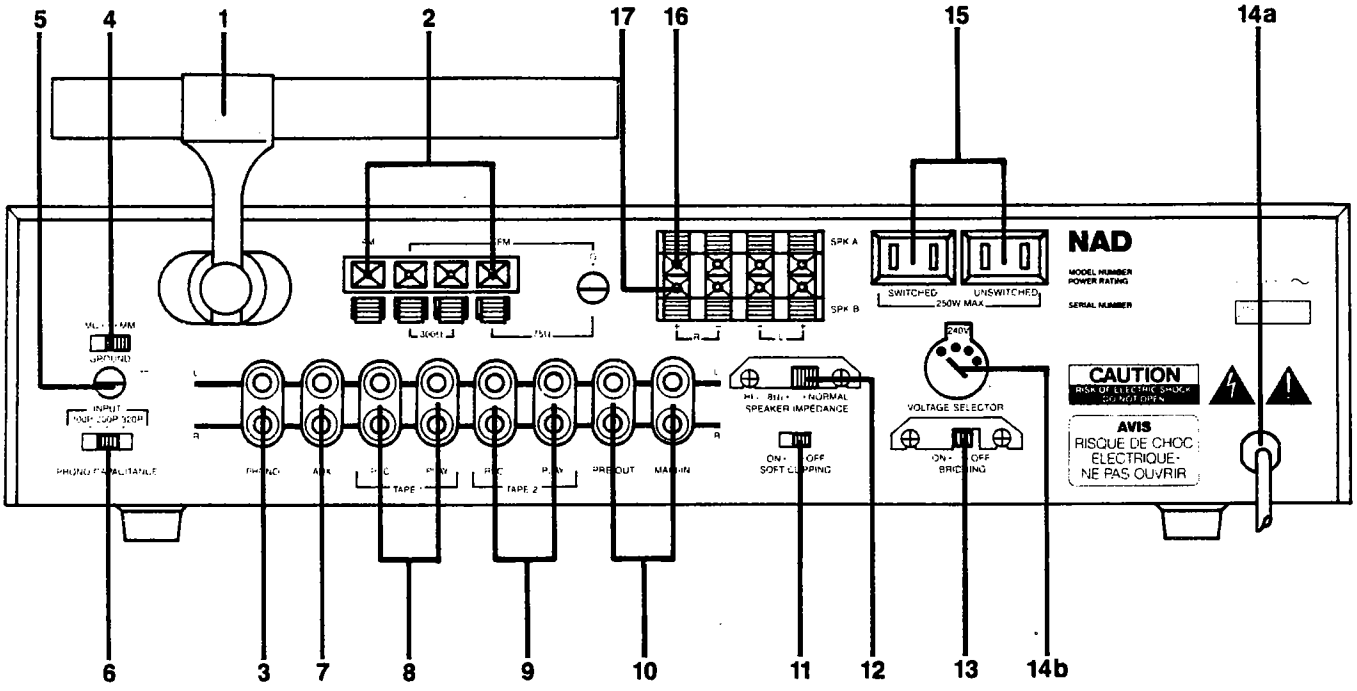


1. Power
2. Mono
3. FM Mute
4. (a.) Up/Down Scan
4. (b.) Search
5. FM/AM
6. Enter
7. Pre-Sets
8. FM Stereo Indicator
9. Tuning Display

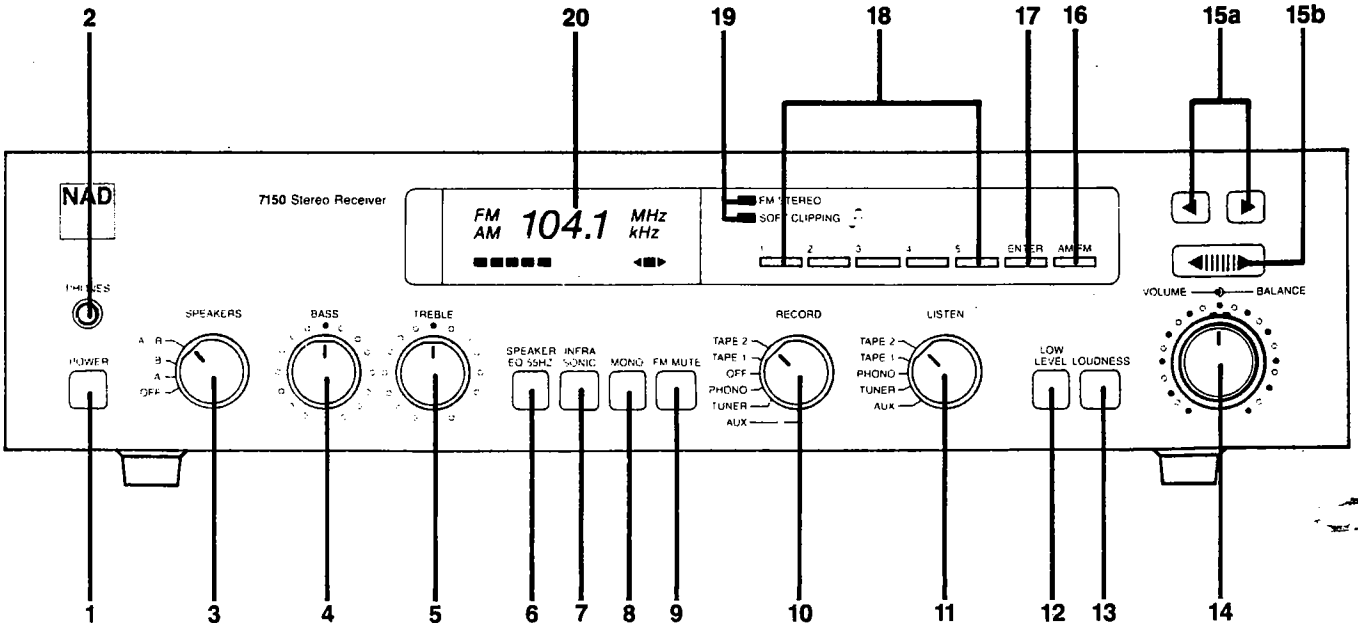


7150 FRONT/REAR VIEW

1. AM Bar Antenna
2. Antenna Terminals
3. Phono Input
4. MM/MC Phono Selector
5. Ground
6. Capacitance Selector
7. Aux Input
8. Tape 1 Rec/Play
9. Tape 2 Rec/Play
10. Preamp Out, Main In
11. Soft Clipping
12. Speaker Impedance
13. Bridging
14a. AC Line Cord
14b. Voltage Selector (Not in U.S./Canada models)
15. AC Convenience Outlets (Not in U.K. model)
16. Speakers A
17. Speakers B



1. Power
2. Phones
3. Speaker Selector
4. Bass
5. Treble
6. Speaker Eq.
7. Infrasonic Filter
8. Mono
9. FM Mute
10. Recording Selector
11. Listen Selector
12. Low Level
13. Loudness Compensation
14. Volume/Balance
15a. Up/Down
15b. Search
16. FM/AM
17. Enter
18. Pre-sets
19. Status Indicators
20. Tuning Display



2150 SPECIFICATIONS

All specifications are measured in accordance with IHF standard A-202

		Normal	Hi(≥8Ω)
Speakers Impedance Switch Set:			
Continuous Average Power Output at 8 ohm 20-20K Hz both Channels Driven		50 W	60 W
Rated Distortion	20-20K Hz	<0.03%	<0.03%
Clipping Headroom	at 8 ohm	+0.5 dB	+0.5 dB
Clipping Power	at 8 ohm	57 W	68 W
	at 4 ohm	80 W	-
	at 2 ohm	90 W	-
Dynamic Headroom	at 8 ohm	+1.8 dB	+1.6 dB
Dynamic Power	at 8 ohm	90 W	100 W
	at 4 ohm	150 W	-
	at 2 ohm	180 W	-

Transient Overload Recovery Time	<1 usec
Slew Factor	>50
Slew Rate	20 V/usec
Damping Factor at 50 Hz (Ref. 8 ohm)	>100
THD 20-20K Hz from 250 mW to 60 W	<0.03%
SMPTTE IMD (60K Hz +7K Hz, 4:1) from 250 mW to 50 W	<0.03%
IHF IMD (19K Hz + 20K Hz) at 50 W	<0.03%
TIM (15K Hz Sinewave +3.18K Hz Square Wave) at 50 W	<0.03%
Frequency Response, 20-20K Hz	+-0.5 dB
Frequency Response Range -3 dB	10-35K Hz
Physical Specifications	
Dimensions WxHxD (inch)	16.5x3.8x12.2
(mm)	420x96x310
Net Weight	8.8Kg/19.4 Lbs.

7150 AUDIO/3150 SPECIFICATIONS

* Measurements identified by an asterisk are taken in accordance with the new IHF A-202 amplifier measurement standard.

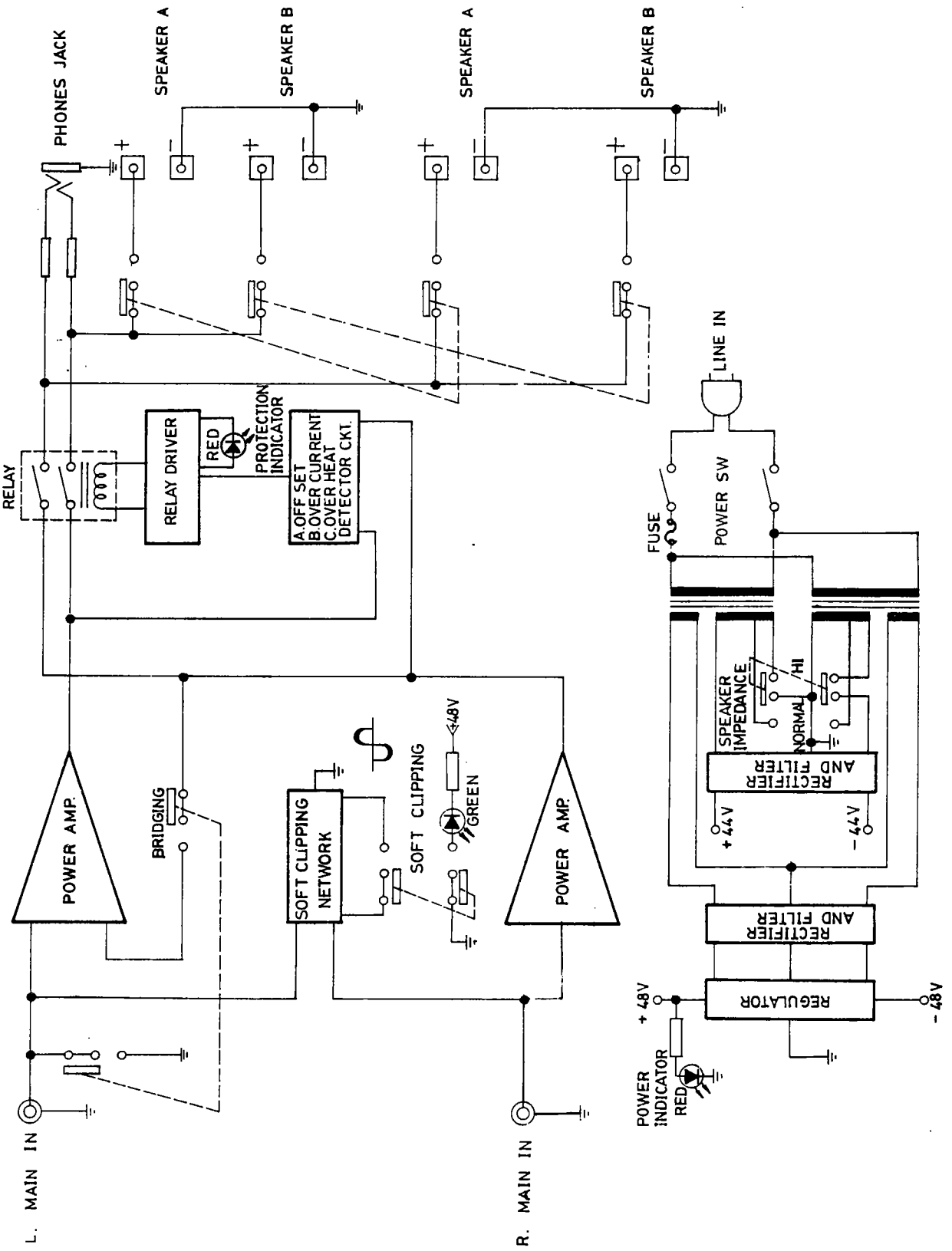
		Normal	Hi(≥8Ω)
Speaker Impedance Switch Set:			
Power Amplifier Section			
* Continuous average power output at 8 ohms 20-20K Hz both Channels Driven		50 W	60 W
Rated distortion	20-20K Hz	<0.03%	<0.03%
* Clipping Headroom	at 8 ohm	+0.5 dB	+0.5 dB
Clipping Power	at 8 ohm	57 W	68 W
	at 4 ohm	80 W	-
	at 2 ohm	90 W	-
Dynamic Headroom	at 8 ohm	+1.8 dB	+1.6 dB
Dynamic Power	at 8 ohm	90 W	100 W
	at 4 ohm	150 W	-
	at 2 ohm	180 W	-

* Transient Overload Recovery Time	≤1 usec	
* Slew Factor	>50	
Slew Rate	20 V/usec	
Damping factor at 50 Hz (Ref. 8 ohm)	>100	
THD 20-20K Hz From 250 mW to 60 W	≤0.03%	
SMPTTE IMD (60K Hz + 7K Hz, 4:1) from 250 mW to 60 W	≤0.03%	
IHF IMD (19K Hz + 20K Hz) at 60 W	≤0.03%	
TIM (15K Hz Sine Wave +3.18K Hz Square Wave) at 60 W	≤0.03%	
Frequency Response, 20-20K Hz	+-0.5 dB	
Frequency Response Range -3 dB	10-35K Hz	
Preamplifier Section	MM	MC
PHONO Input Resistance	47K ohm	47K ohm
PHONO Input Capacitance (Selectable)	100P/200P/320P	100P/200P/320P
Input Sensitivity (1K Hz) * For 1 Watt out	0.4 mV	0.035 mV
50 Watt out	2.5 mV	0.25 mV
Input Overload at 1K Hz	240 mV	24 mV
20 Hz	24 mV	2.4 mV
20K Hz	2.4 V	180 mV
THD (20-20K Hz) and IMD at +30 dB input level	≤0.015%	0.04%
RIAA Response Accuracy	+-0.2 dB	+-0.5 dB
Signal to Noise Ratio A-Weighted		
(a) with phono cartridge connected		
Ref 10 mV	>82 dB	
*Ref 5 mV	>76 dB	
*Ref 0.5 mV		68 dB
(b) with short-circuit input		
Ref 10 mV	>90 dB	
Ref 0.5 mV		70 dB
High Level Input		
* Input Impedance Resistance/Capacitance	150K ohm/220pF	
Input sensitivity * for 1 watt out	20 mV	
for 50 watt out	145 mV	
Signal to Noise Ratio A-Weighted		
(a) with mute off Ref 1 watt out	>80 dB	
Ref 50 watt out	>95 dB	
(b) with mute on Ref 1 watt out	>93 dB	
* Maximum Input Signal	15 V	
Frequency Response, 20-20K Hz	+-0.5 dB	
Controls		
Bass Control, Range at 100K Hz	+-8 dB	
Treble Control, Range at 10K Hz	+-7 dB	
Infrasonic Filter Turn Over Frequency	20K Hz	
Slope (dB/Octave)	12	
Speaker Eq Turn Over Frequency	55	
Slope (dB/Octave)	12	
Mute	-20 dB	
Physical Specifications		
Dimensions WxHxD (inch)	16.5x3.8x12	
(cm)	42x9.6x310	
Net Weight	9.0Kg/19.8 Lbs	

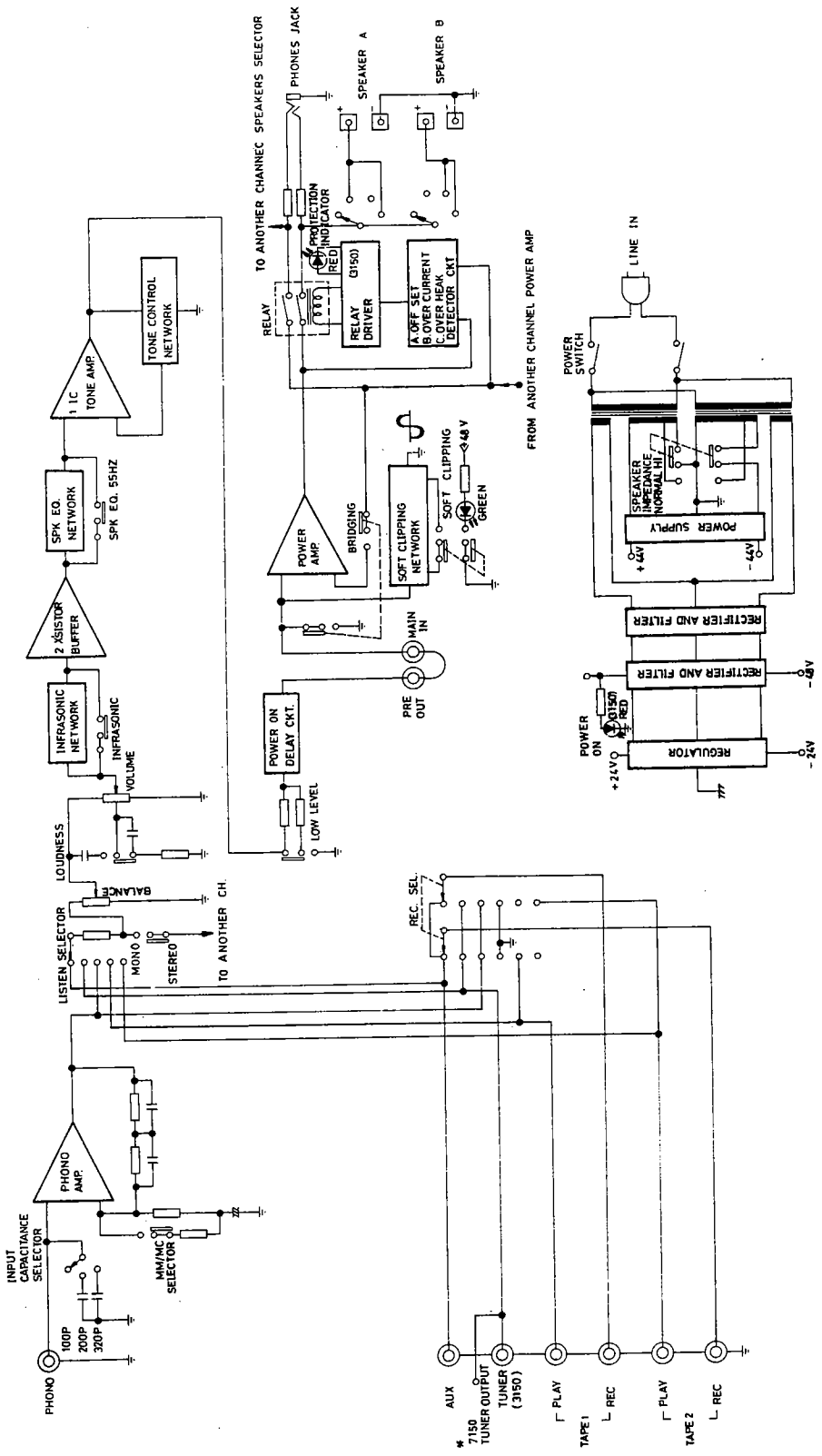
7150 TUNER/4150 SPECIFICATIONS

	Norminal	Limited
FM Tuner Section		
Input Sensitivity IHF, 30 dB Quieting	1.4 uV	1.8 uV
IHF, 50 dB S/N Mono/Stereo	3.5 uV/30 uV	4.5 uV/40 uV
Signal to Noise Ratio (A Weighted, at 65 dBf) Mono/Stereo	83 dB/75 dB	78 dB/70 dB
Frequency Response, 30-15K Hz	+-0.5 dB	+-0.5 dB
De-emphasis Accuracy, 75 usec	+-0.5 dB	+-1 dB
Channel Separation 1K Hz	45 dB	40 dB
30-15K Hz	35 dB	30 dB
Selectivity, Alternate Channel (400K Hz)	70 dB	65 dB
Capture Ratio at 45 dBf and 65 dBf	1.0 dB	2.0 dB
AM Suppression at 45 dBf and 65 dBf	58 dB	53 dB
Image Rejection	100 dB	95 dB
IF Rejection	95 dB	90 dB
SCA Rejection	70 dB	65 dB
Pilot Signal Suppression	60 dB	55 dB
T.H.D. at 100% Modulation 1K Hz Mono/Stereo	0.08%/0.1%	0.15%/0.2%
100K Hz Mono/Stereo	0.10%/0.2%	0.2%/0.3%
6K Hz Mono/Stereo	0.10%/0.2%	0.2%/0.3%
T.H.D. Stereo 1K Hz 50%/150%	0.1%/0.2%	0.2%/0.3%
AM Tuner Section		
Usable Sensitivity	300 uV/m	450 uV/m
Selectivity	30 dB	25 dB
Image Rejection	50 dB	45 dB
IF Rejection	50 dB	45 dB

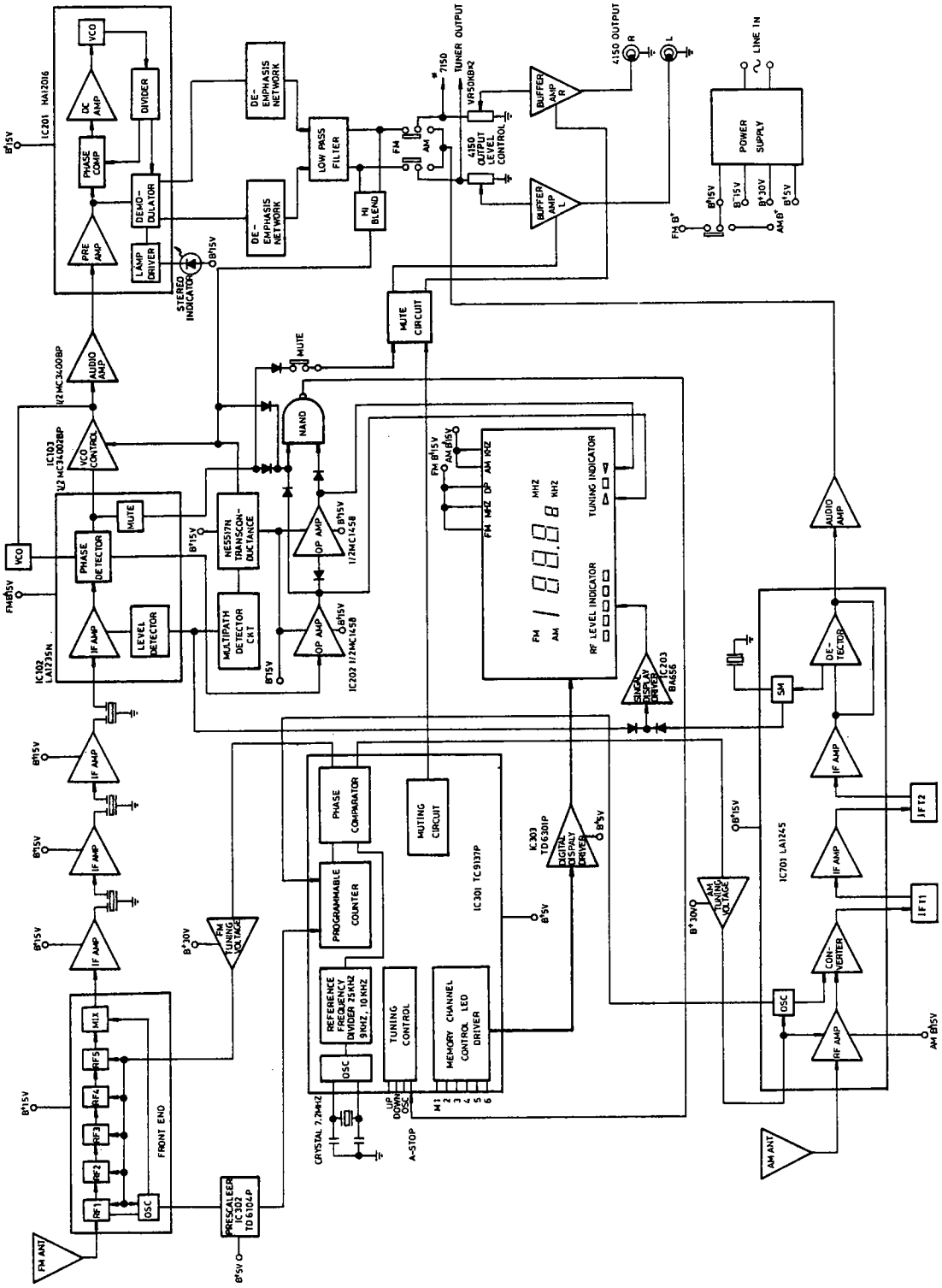
2150 BLOCK DIAGRAM



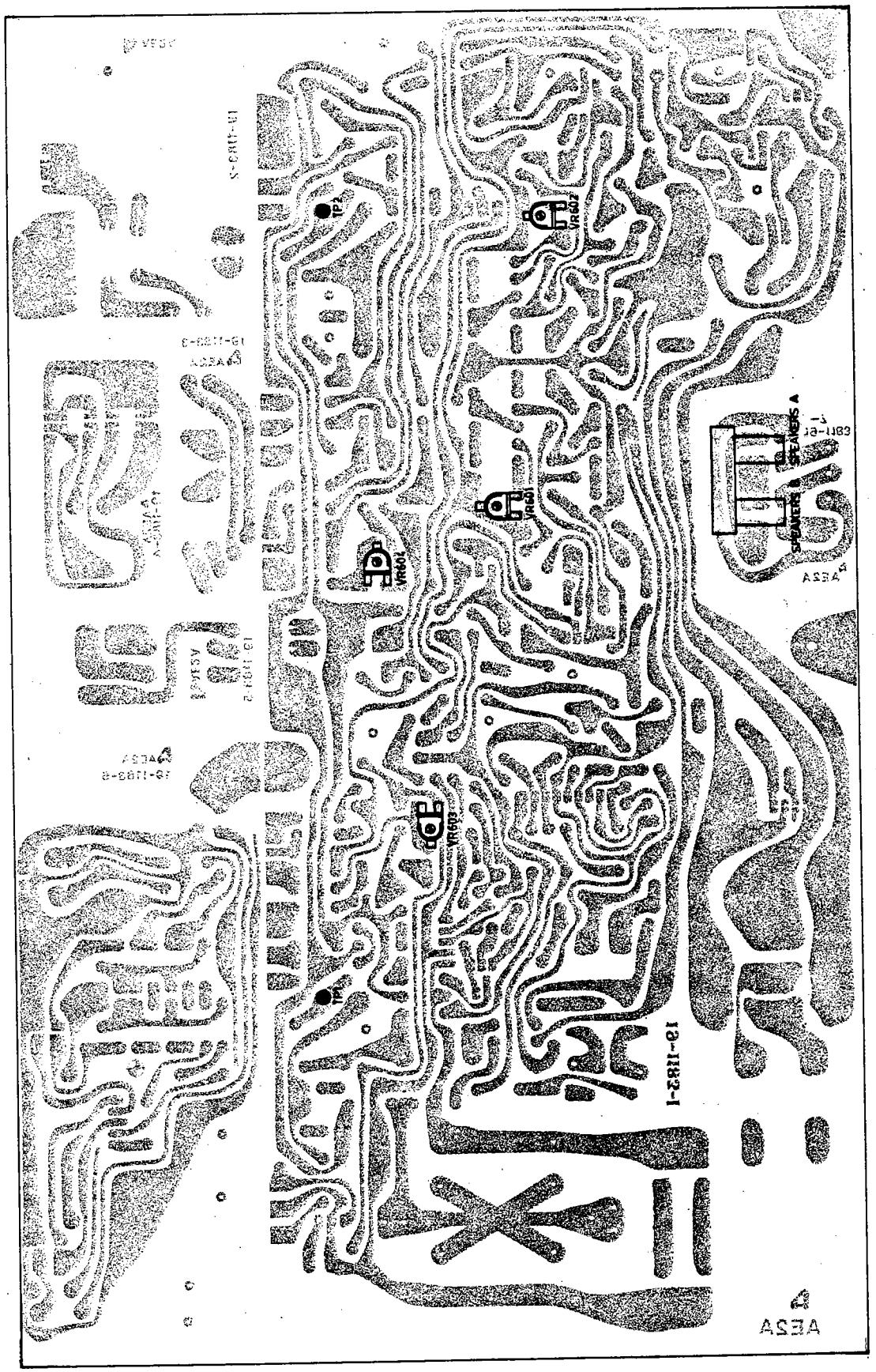
7150 AUDIO / 3150 BLOCK DIAGRAM



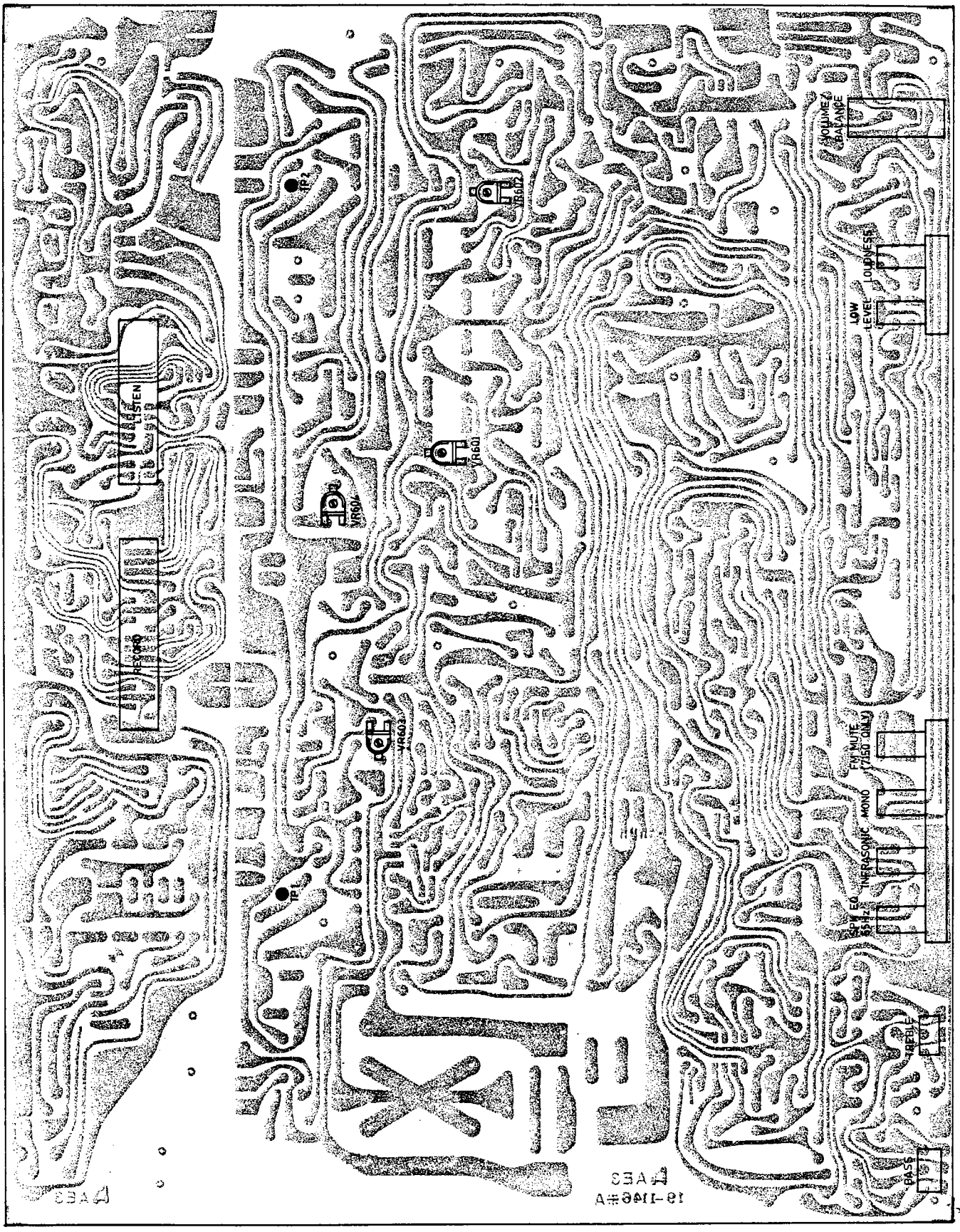
7150 TUNER/4150 BLOCK DIAGRAM



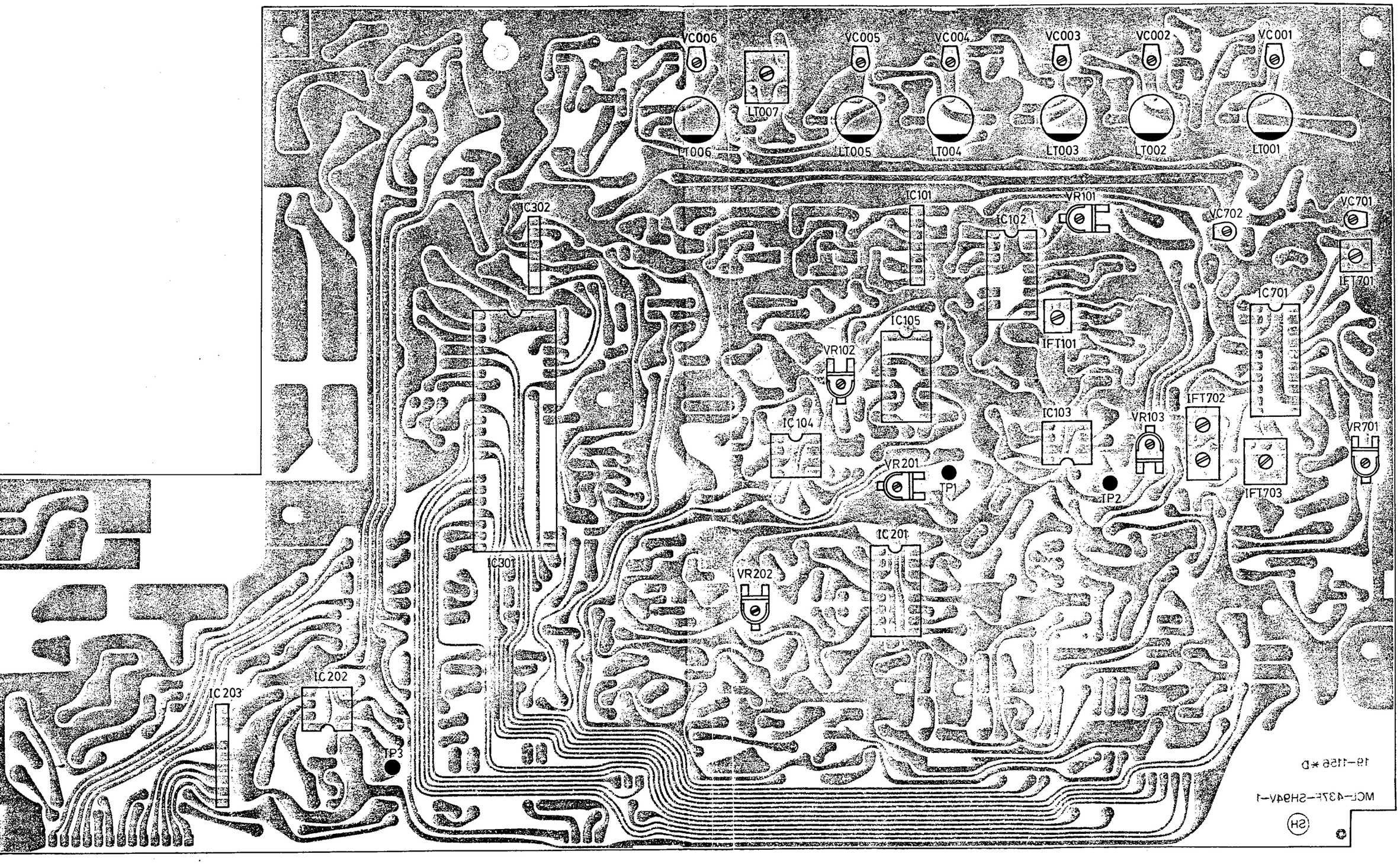
2150 ADJUSTMENT POINT



7150 AUDIO/3150 ADJUSTMENT POINT

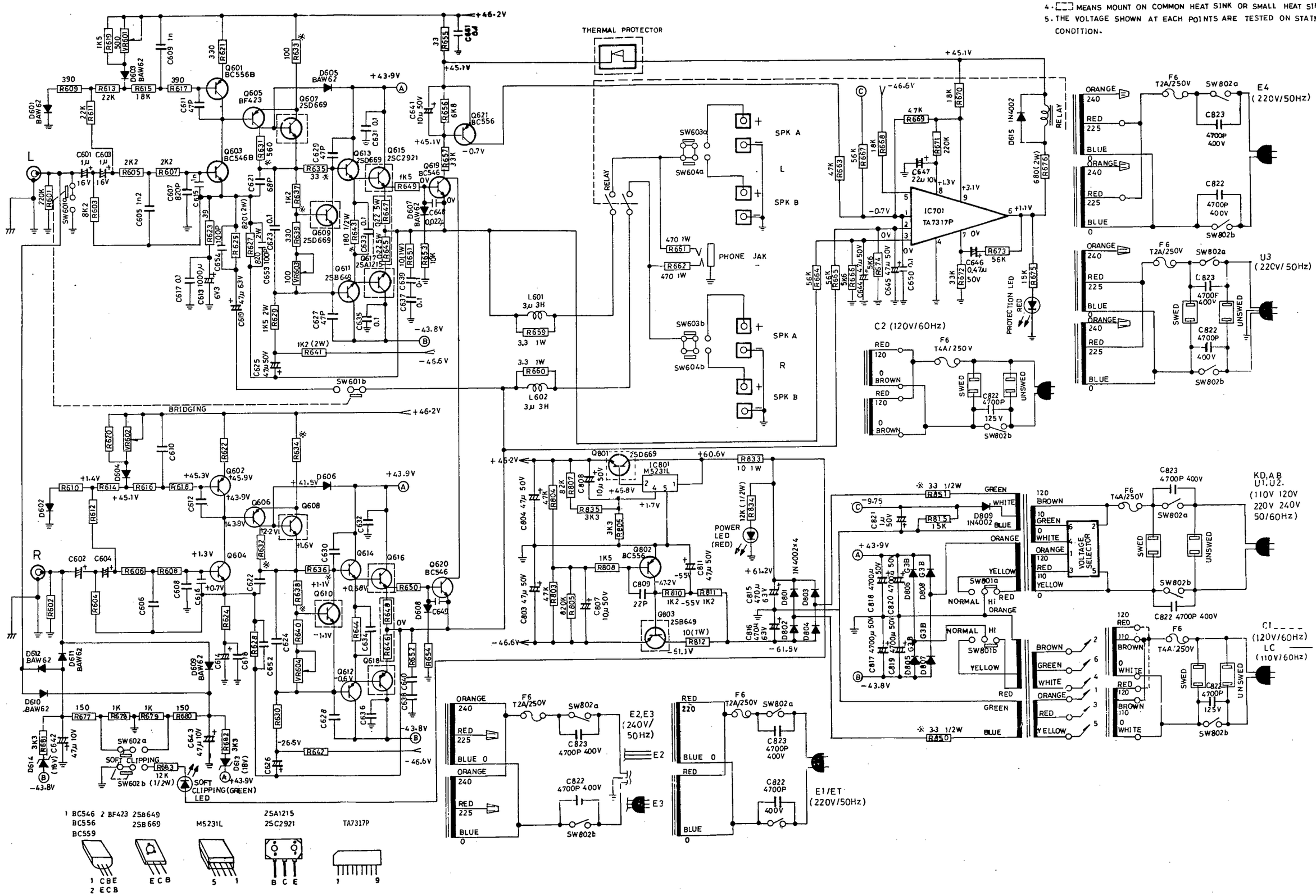


TUNER/4150 ALIGNMENT POINT



2150 CIRCUIT DIAGRAM

NOTES
1. ALL RESISTORS ARE 1/4W ±5% CARBON UNLESS OTHERWISE SPECIFIED.
2. CAPACITANCE ARE IN uF UNLESS OTHERWISE SPECIFIED.
3. ※ MEANS RESISTOR STAND UP ON THE PCB.
4. [ ] MEANS MOUNT ON COMMON HEAT SINK OR SMALL HEAT SINK.
5. THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATION CONDITION.



0/3150/4150/7150 ALIGNMENT PROCEDURE

MENT

ALIGNMENT
he power for 5 minutes pre- heating.
) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker
s, then adjust VR-601 (VR-602) till the reading are closed to 0mV.

T ALIGNMENT
603 to fully clockwise position and VR-604 to fully counter-clockwise position.
he power for 5 minutes pre-heating.
he load in speaker terminals.
one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other to
TP2) on main PCB foiling side, adjust VR-603 (VR-604) till the reading is between
1 (TP2) on main PCB foiling side, adjust VR-603 (VR-604) till the reading is
4.4mv and 11mv.

AUDIO) ALIGNMENT

ALIGNMENT
he power for 5 minutes pre-heating.
me control to minumum position and speaker selector switch to "A+B" position.
R) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker
s, then adjust VR-601(VR-602)till the reading are colsed to 0mV.
NT ALIGNMENT
-603 to fully colckwise position and VR-604 to fully counter-clockwise position.
he power for 5 minutes pre-heating.
me control to minimum position and speaker selector switch to "A+B" position..
he load on speaker terminals.
one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other
TP1 (TP2) on main PCB. Foiling side, adjust VR-603 (VR-604) till the reading is
4.4mV and 11mV.

(TUNER) ALIGNMENT

ALIGNMENT a. Selector Switch in FM position
b. AC Line Voltage at Rated Voltage
c. Monitor OUTPUT at record OUTPUT
d. FM SG is external modulated by stereo SG and connected to FM 300 OHM antenna terminal on the rear panel through FM dummy antenna.

tep	FM SG	Stereo Sg	Dial Setting	Indicator	Adjustment	Adjust For
	98 MHz 0% Modulation	——	98 MHz	Connect frequeney Counter To Pin TP1	VR201	76 kHz±50 Hz
2	98 MHz	10% 19 kHz 90% L+R	98 MHz	——	VR201	Stereo LED Light
	98 MHz	10% 19 kHz pilot L only	98 MHz	Connect V.T.V.M or Oscilloscope to R REC out	VR202	Minimum OUTPUT
2		10% 19 kHz pilot R only	98 MHz	Connect V.T.V.M or Oscilloscope to L REC out	VR202	
3		Repeat Step 1 and Step 2				
4		IF there is an excessive difference between leak-free effect of both channels, slightely adjust VR202 So that the levels of signal leakage of both channels are equal.				
dB	98 MHz SG OUTPUT Level 30uV	10% 19 kHz pilot.0% L+R, L-R.	98 MHz	V.T.V.M or Oscilloscope	VR102	Just minimum OUTPUT

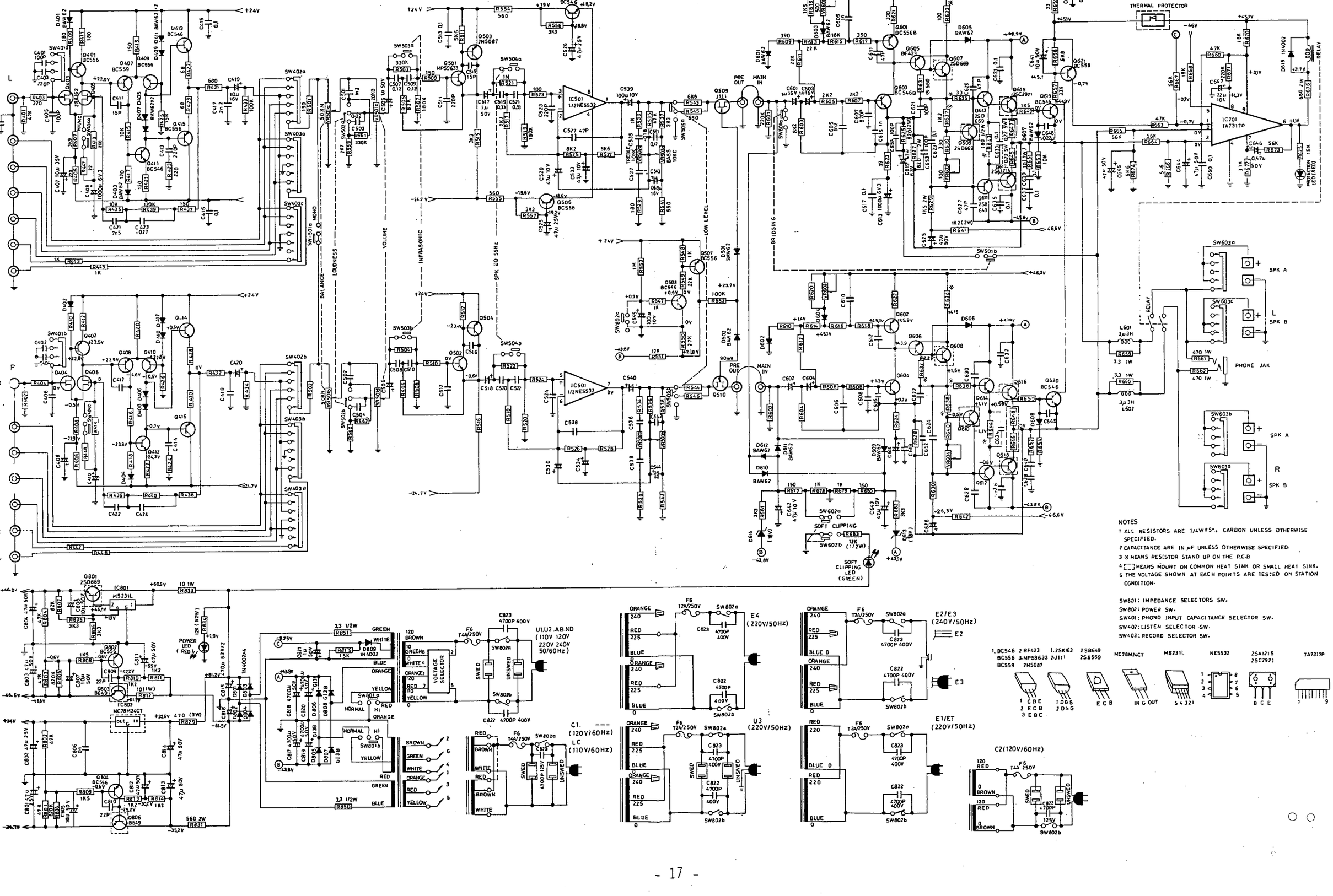
2. FM ALIGNMENT a. Selector Switch in FM position
b. AC Line Voltage at Rated Voltage
c. Monitor OUTPUT at record OUTPUT

SECTION		FM SG Connection	Carrier	Mod.	Dial Setting	Idicator	Adjustment	Adjust for
FM IF		——	——	——	point of non-interference	Digital Voltage Meter	IFT 101	to pin TP3 Voltage 0V
FM RF	STEP 1	Connect to FM 300 OHM antenna on the rear panel through FM Dummy Antenna.	90 MHz	100% Mod 400 Hz	90 MHz	Digital Voltage Meter	LT 606	Tuning Voltage 4.3v ±0.1v
	2		106MHz		106MHz		VC006	Tuning Voltage 18.7v±0.2v
	3	Repeat Step 1 and Step 2						
FM Sens	1		90 MHz	100% Mod 400 Hz	90 MHz	V.T.V.M Oscilloscope	LT001 to LT005	Maxmimum OUTPUT
	2		106MHz		106 MHz		VC001 to VT005	
	3		98 MHz		98 MHz		LT007	
	4	Repeat Step 1.2 and Step 3						
FM Mute	1	Muting Push Switch "ON" Adjust attenuator of FM SG for Antenna Input 14dB						
	2		98 MHz	100%Mod 400 Hz	98 MHz	V.T.V.M Oscilloscope	VR 101	OUTPUT just disappear
	3	Increase FM SG OUTPUT 4dB more to get fully audio OUTPUT IF fully audio OUTPUT cannot get, repeat Step 1.2.3						
	4							

3. AM ALIGMENT

SECTION		AM SG Connection	Carrier	Mod.	Dial Setting	Indicator	Adjustment	Adjust for
AM IF		Hot side of SG OUTPUT through 200pF to AM ANT. trimmer	450kHz	30% Mod	point of non-interference	V.T.V.M. or Oscilloscope	IFT 703 IFT 702	Maximun OUTPUT
AM Range	STEP 1	Hot side of SG OUTPUT through a loop ANT radiate to AM ANT BAR vertically, and keep 60cm distance.	600kHz	30% Mod 400Hz	600kHz	Digital Voltage Meter	IFT 701	Tuning Voltage 4.5V±0.1
	2		1400kHz	30% Mod 400Hz	1400kHz			
	3		Repeat Step 1 and Step 2				VC 701	Tuning Voltage 20.5V±0.2V
AM Sens	1	Hot side of SG OUTPUT through a loop ANT radiate to AM ANT BAR vertically and keep 60cm distance.	600kHz	30% Mod 400Hz	600kHz	V.T.V.M or Oscilloscope	ANT BAR	Maximum OUTPUT
	2		1400kHz	30% Mod 400Hz	1400kHz		VC 702	
	3		Repeat Step 1 and Step 2					

0 CIRCUIT DIAGRAM



NOTES

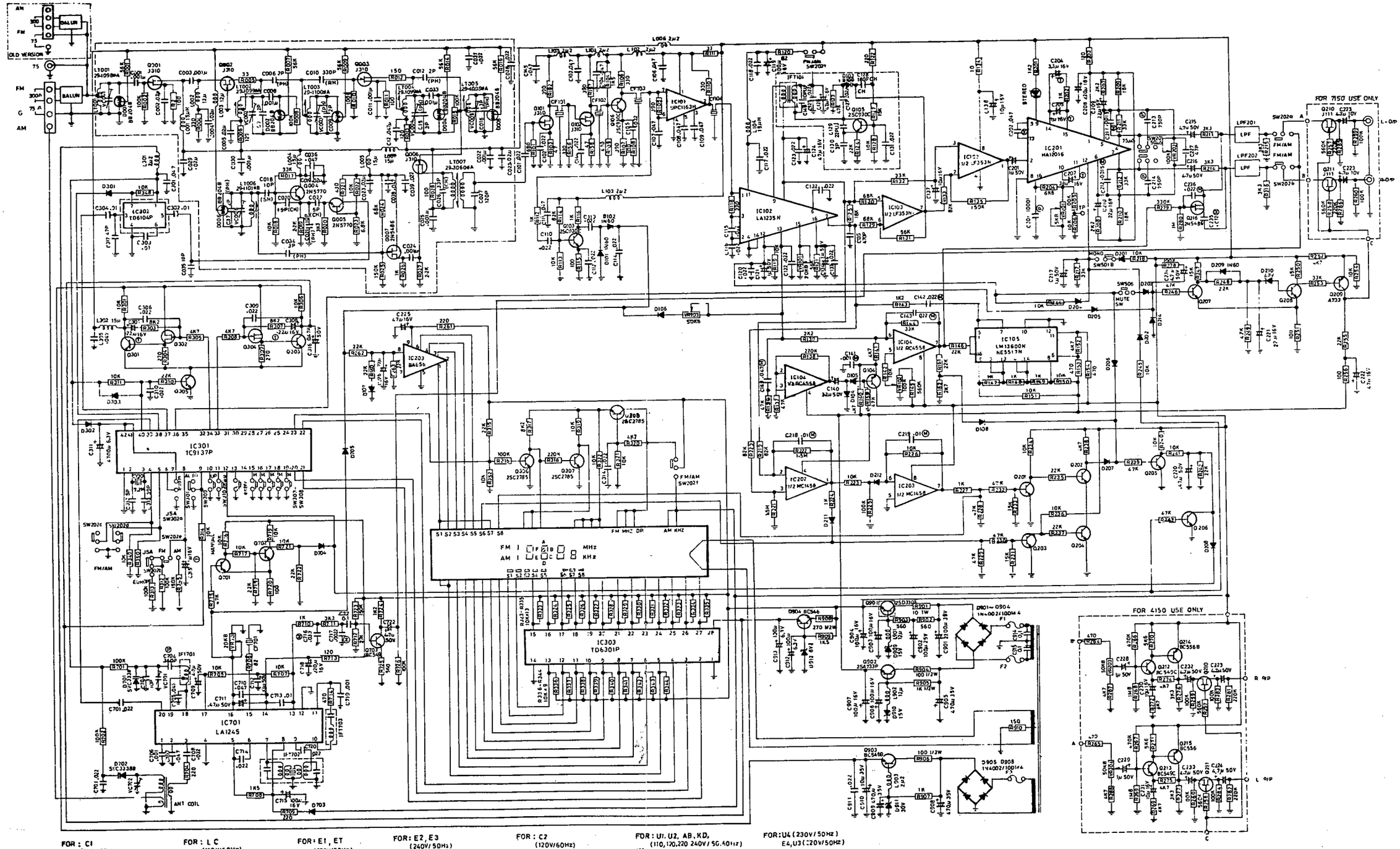
1 ALL RESISTORS ARE 1/4W ±5%. CARBON UNLESS OTHERWISE SPECIFIED.
2 CAPACITANCE ARE IN μF UNLESS OTHERWISE SPECIFIED.
3 ※ MEANS RESISTOR STAND UP ON THE P.C.B
4 □□ MEANS MOUNT ON COMMON HEAT SINK OR SMALL HEAT SINK.
5 THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATION CONDITION.

SW801: IMPEDANCE SELECTORS SW.
SW802: POWER SW.
SW401: PHONO INPUT CAPACITANCE SELECTOR SW.
SW402: LISTEN SELECTOR SW.
SW403: RECORD SELECTOR SW.

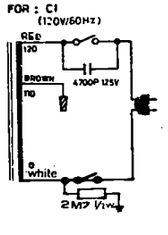
1. BC546 2 BF423 1.2SK163 2SB649
BC556 3.MPS9633 2.J111 2SB669
BC559 2N5087

MC78M24CT | MS231L | NE5532 | 2SA1215 2SC2921 | TA7317P

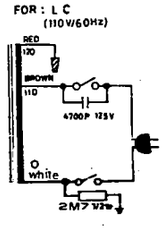
7150 TUNER / 4150 CIRCUIT DIAGRAM



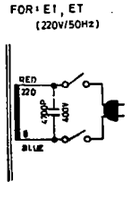
FOR : C1 (120V/60Hz)



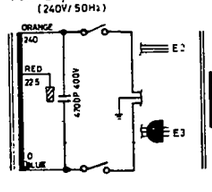
FOR : L C (110V/60Hz)



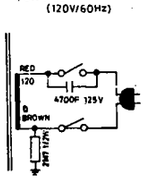
FOR : E1, ET (220V/50Hz)



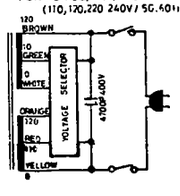
FOR: E2, E3 (240V/50Hz)



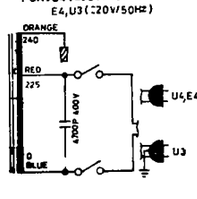
FOR : C2 (120V/60Hz)



FOR : U1, U2, AB, KD, (110, 120, 220 240V/50-60Hz)



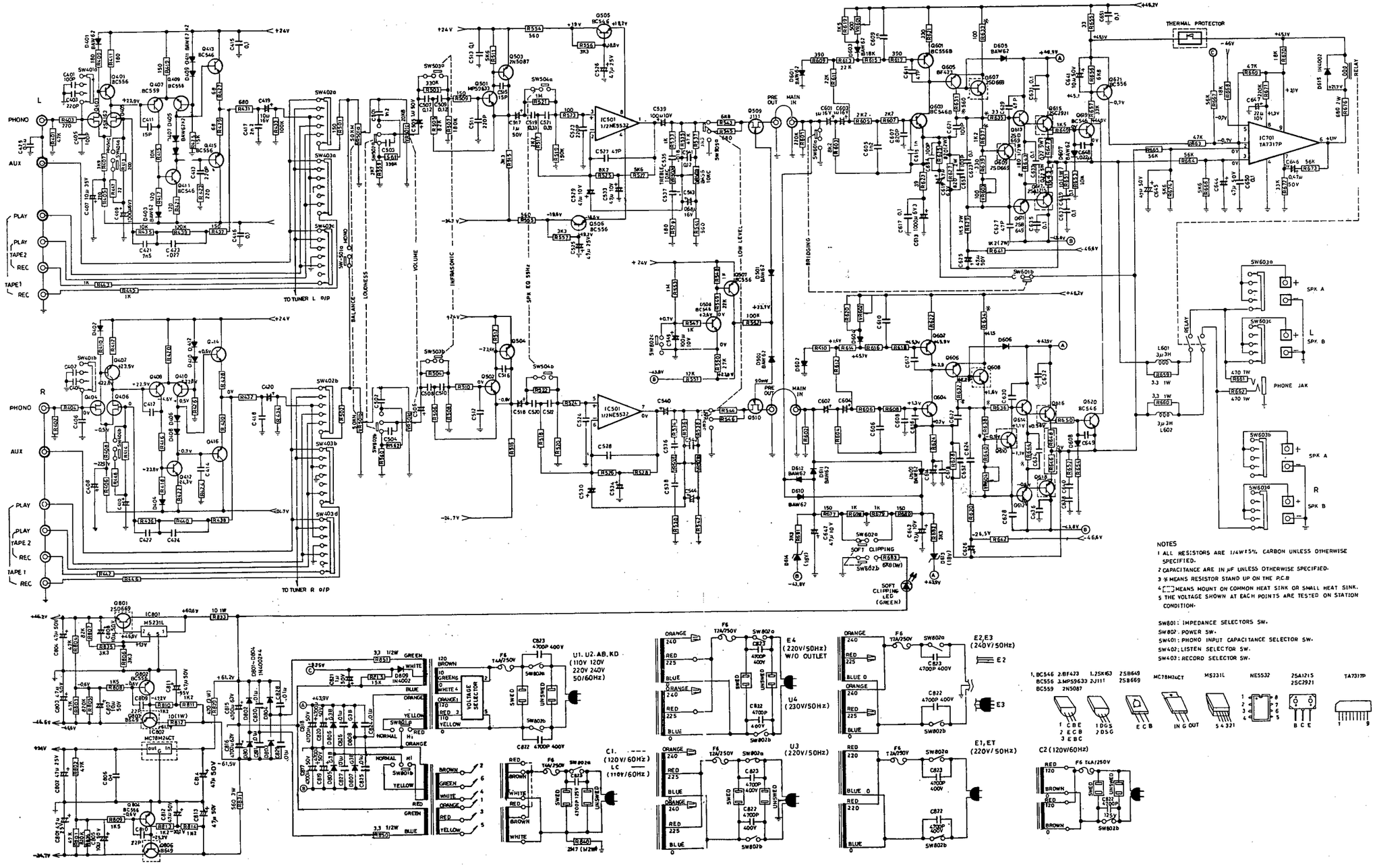
FOR : U4 (230V/50Hz) E4, U3 (220V/50Hz)



NOTE: ALL THE RESISTORS ARE 1/4 W CARBON FILM RESISTOR UNLESS OTHERWISE SPECIFIED.
2 ALL THE NPN TRANSISTORS ARE 2SC1815GR UNLESS OTHERWISE SPECIFIED
3 ALL THE DIODES ARE IN4148 UNLESS OTHERWISE SPECIFIED

F1/F2/F3 RATING:
1 T500MA250V FOR E1, E2, E3, E4, U2, KD
2 500MA 250V FOR U1, C2, LC, AB, U1

7150 AUDIO CIRCUIT DIAGRAM

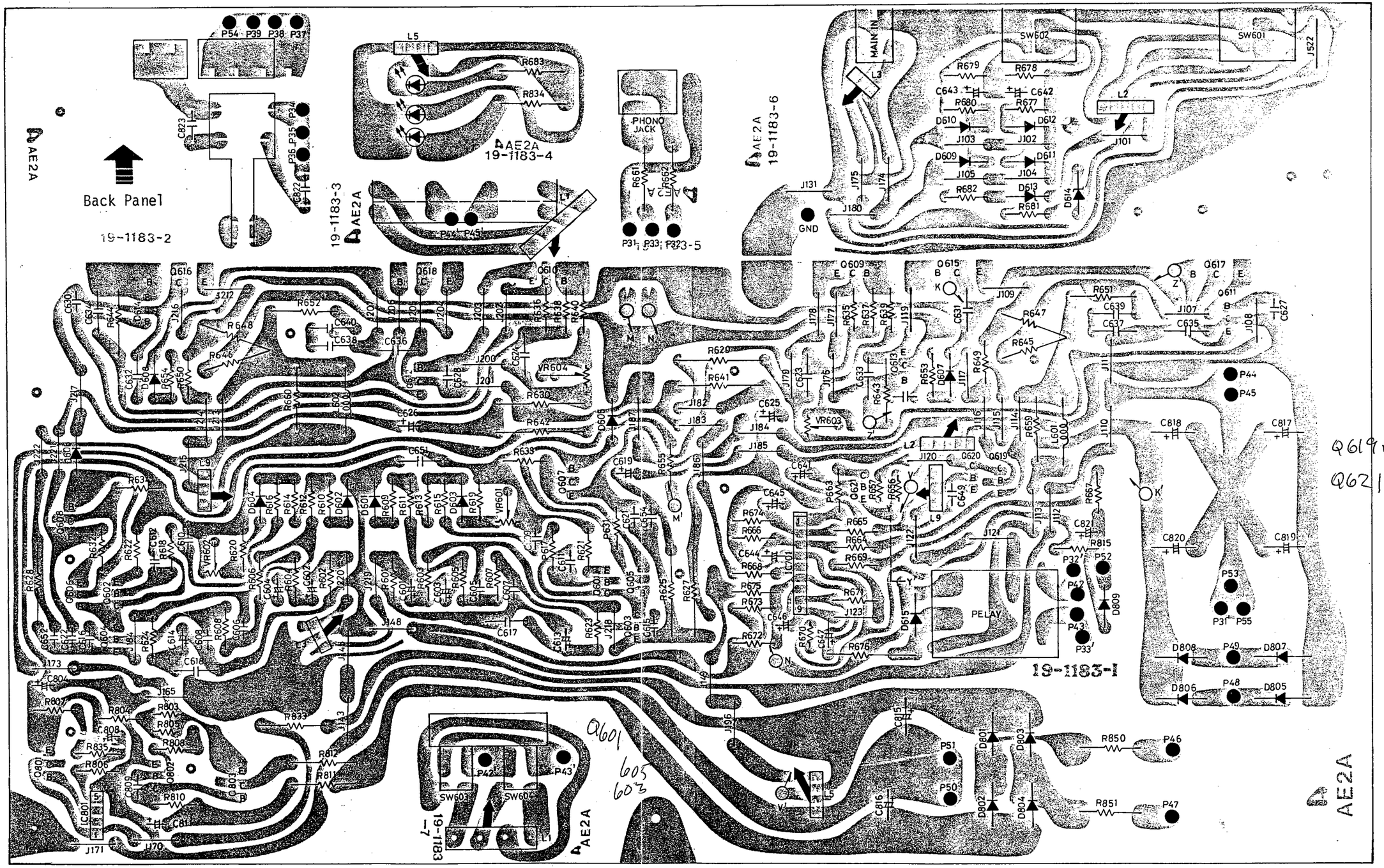


NOTES

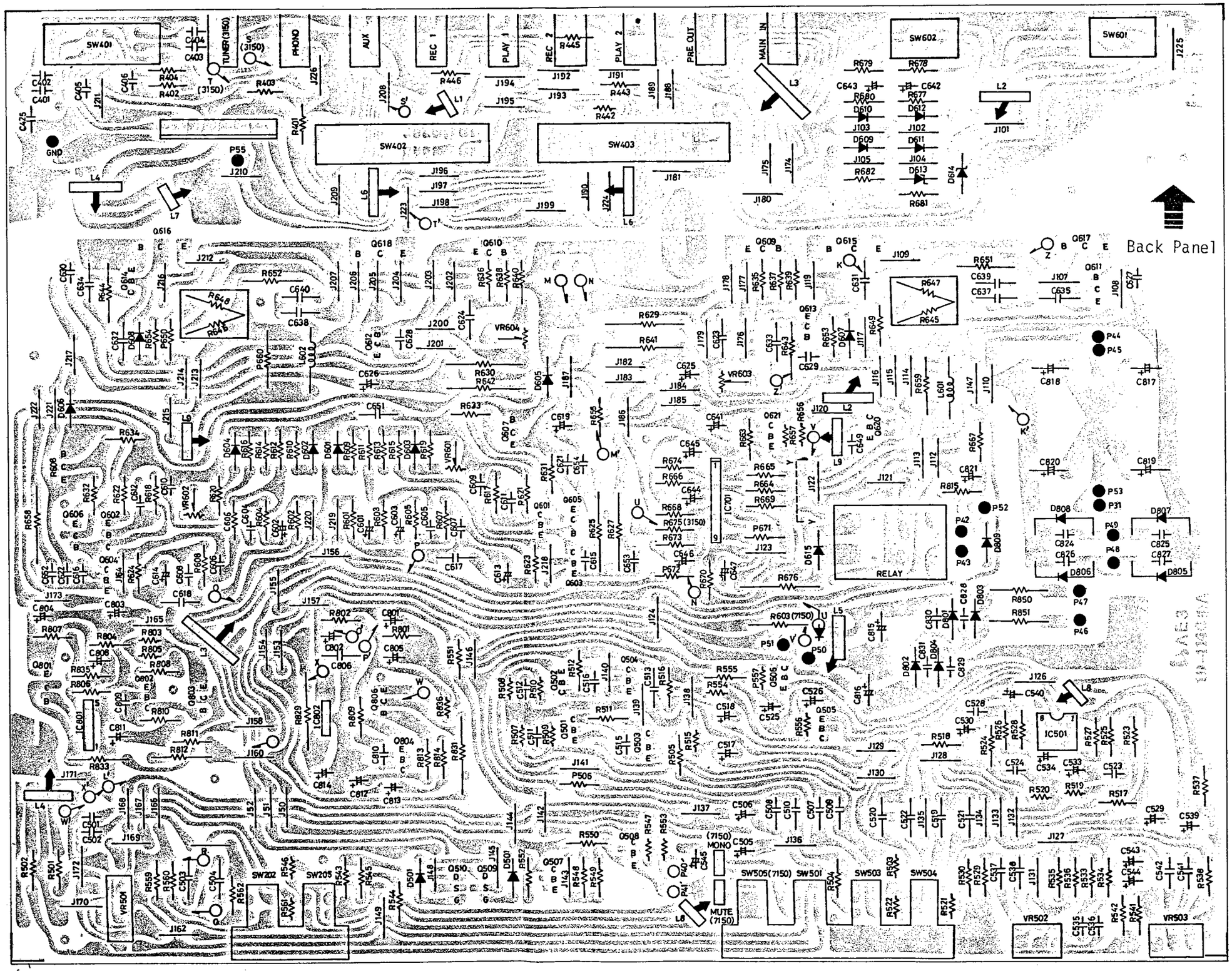
1 ALL RESISTORS ARE 1/4W ±5%, CARBON UNLESS OTHERWISE SPECIFIED.
2 CAPACITANCE ARE IN μF UNLESS OTHERWISE SPECIFIED.
3 ※ MEANS RESISTOR STAND UP ON THE P.C.B
4 ⬚ MEANS MOUNT ON COMMON HEAT SINK OR SMALL HEAT SINK.
5 THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATION CONDITION.

SW801 : IMPEDANCE SELECTORS SW.
SW802 : POWER SW.
SW401 : PHONO INPUT CAPACITANCE SELECTOR SW.
SW402 : LISTEN SELECTOR SW.
SW403 : RECORD SELECTOR SW.

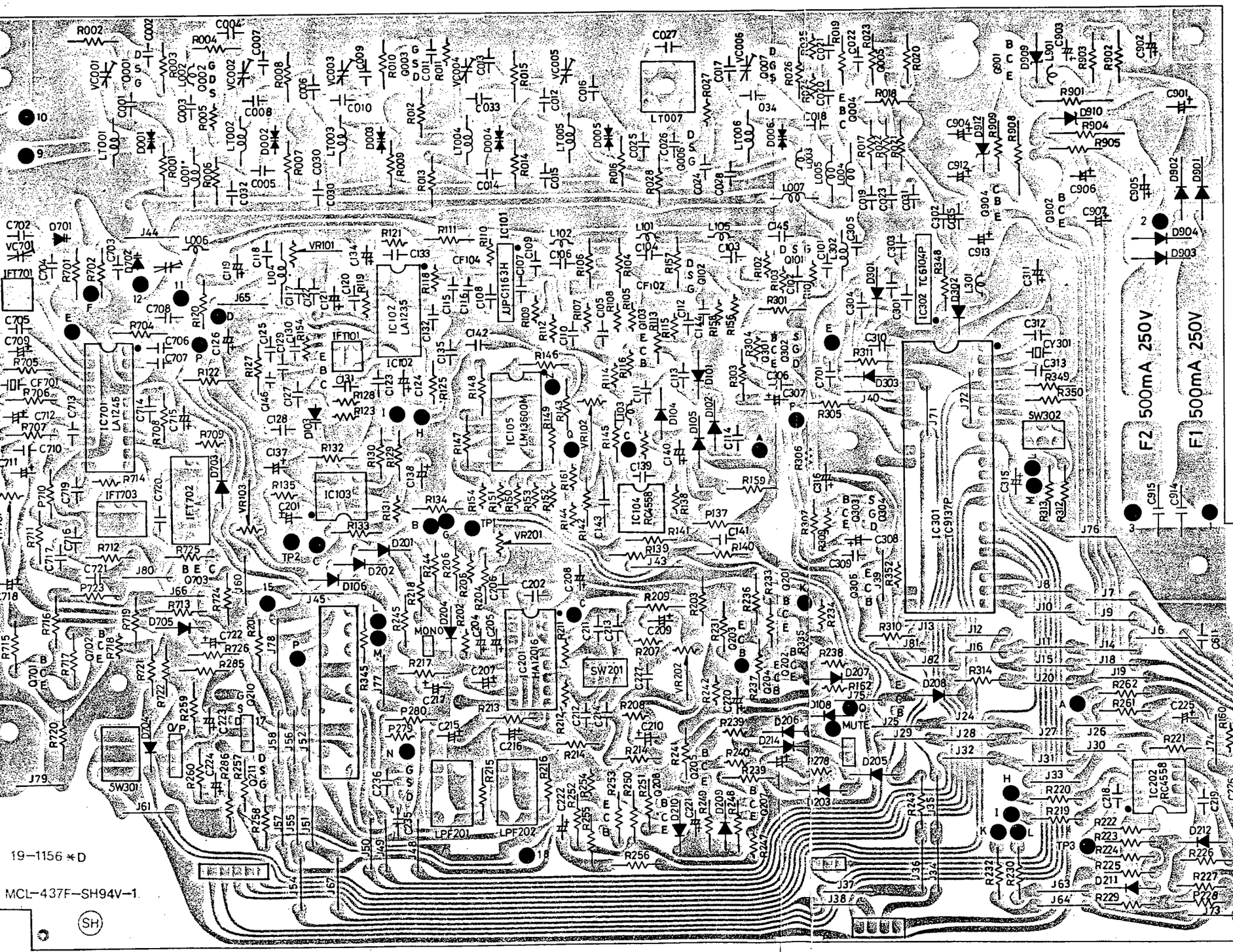
2150 PCB PARTS LOCATION (BOTTOM VIEW)



7150 AUDIO/3150 PCB PARTS LOCATION (BOTTOM VIEW)



TUNER/4150 PCB PARTS LOCATION (BOTTOM VIEW)

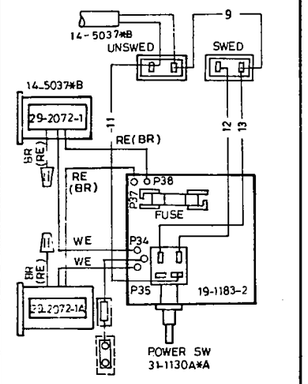


2150 WIRING DIAGRAM

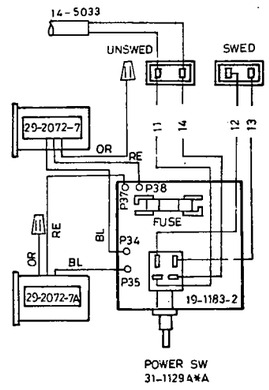
PRIMARY SECTION

FOR: C1 (120V/60Hz)
LC (110V/60Hz)

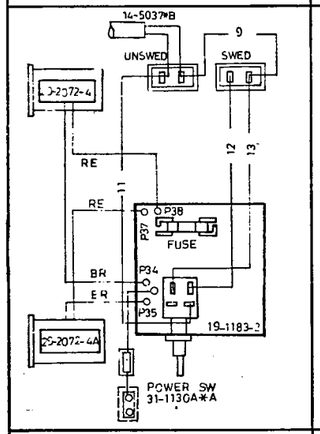
NOTE: ( ) FOR LC



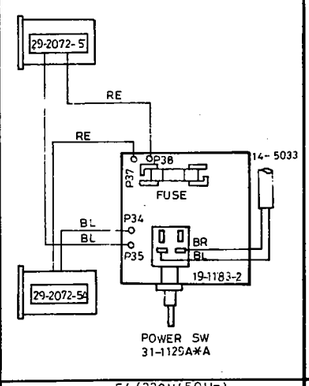
FOR: U4 (230V/50Hz)



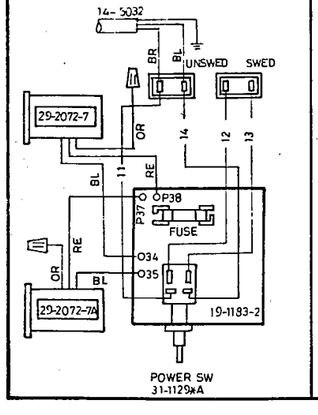
FOR: C2 (120V/60Hz)



FOR: E1,E7(220V/50Hz)



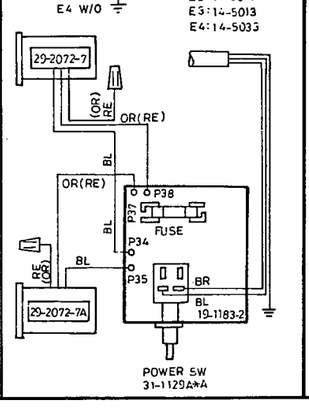
FOR: U3 (220V/50Hz)



FOR: E4 (220V/50Hz)
E2 (240V/50Hz)
E3 (240V/50Hz)

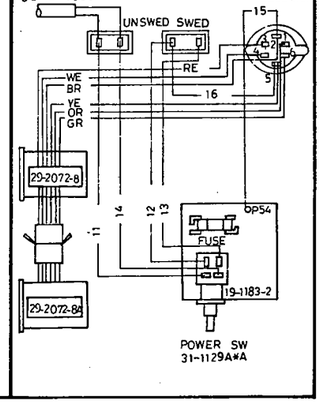
NOTE: ( ) FOR E4
E4 W/O ⏚

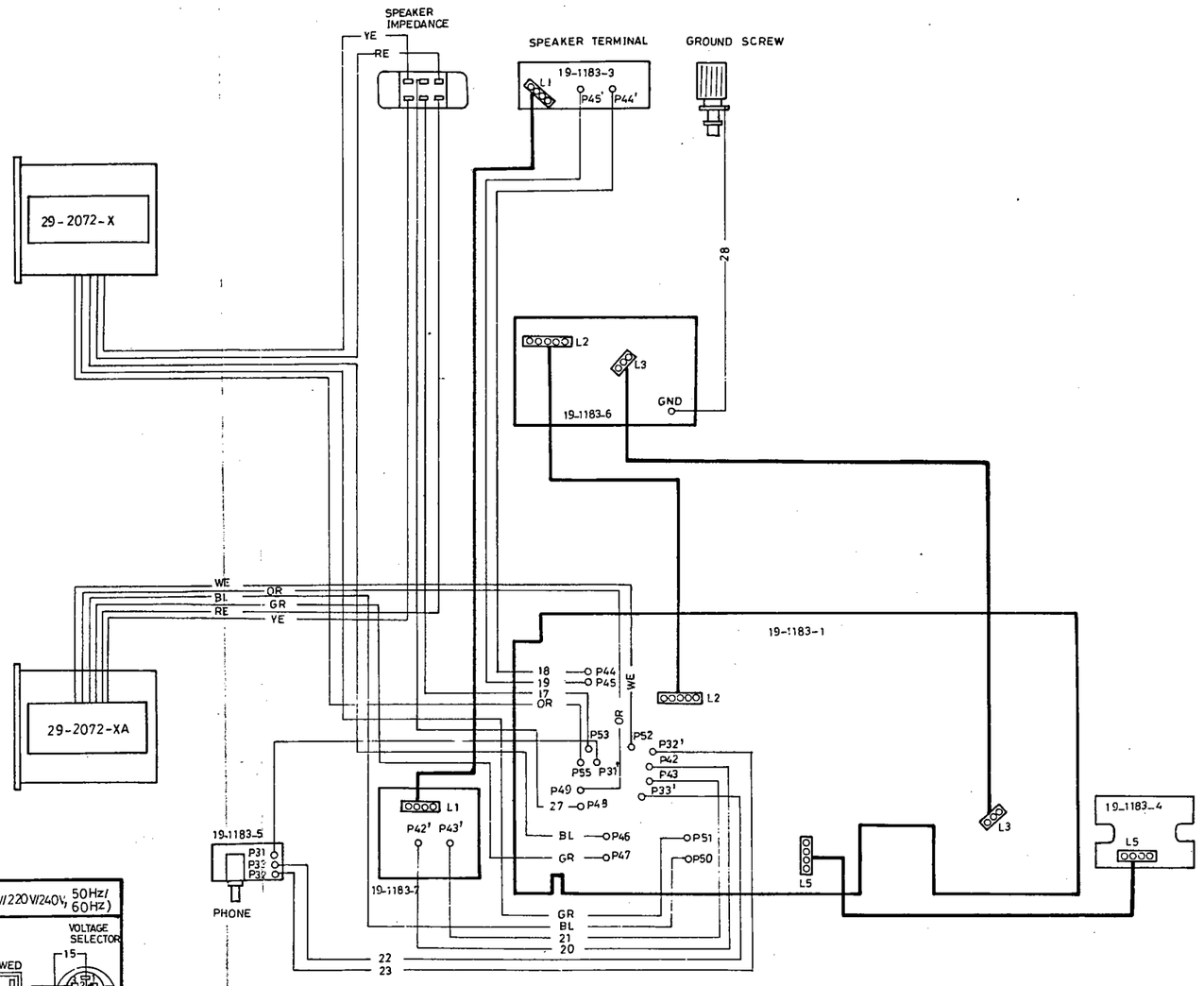
E2: 14-5025
E3: 14-5013
E4: 14-5033



FOR: KD,AB
U1,U2 (110V/120V/220V/240V, 50Hz/60Hz)

U1: 14-5037*B
U2: 14-5033

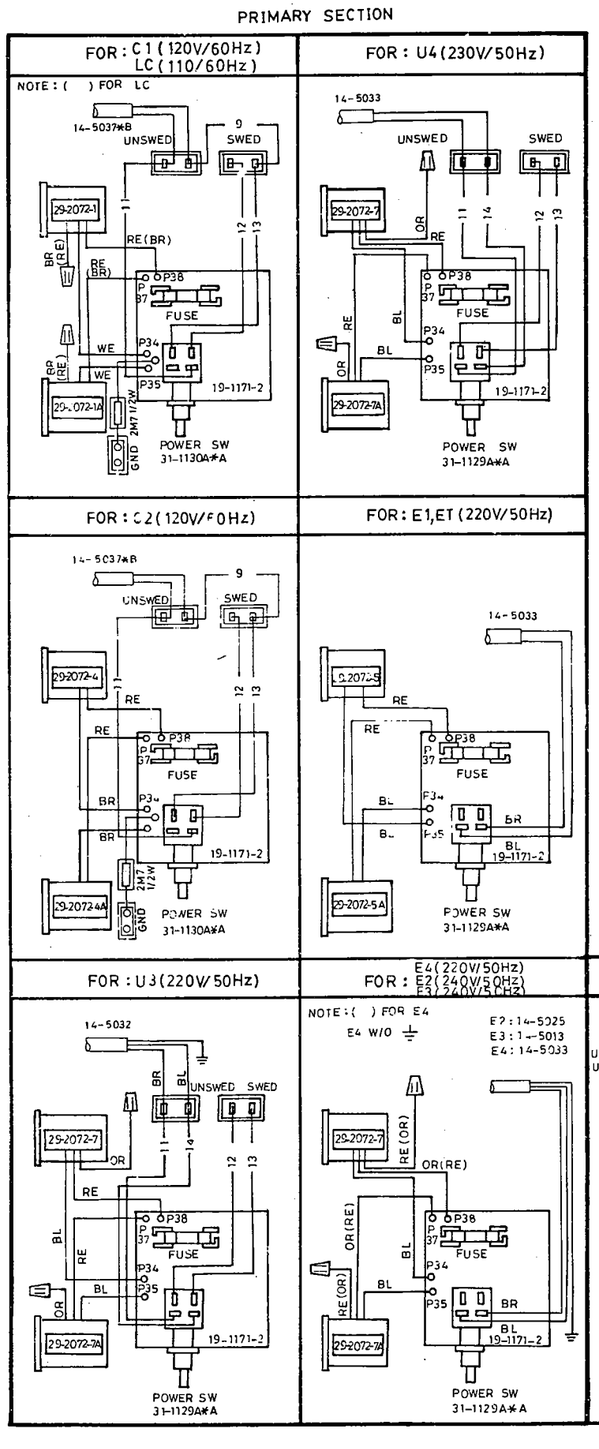


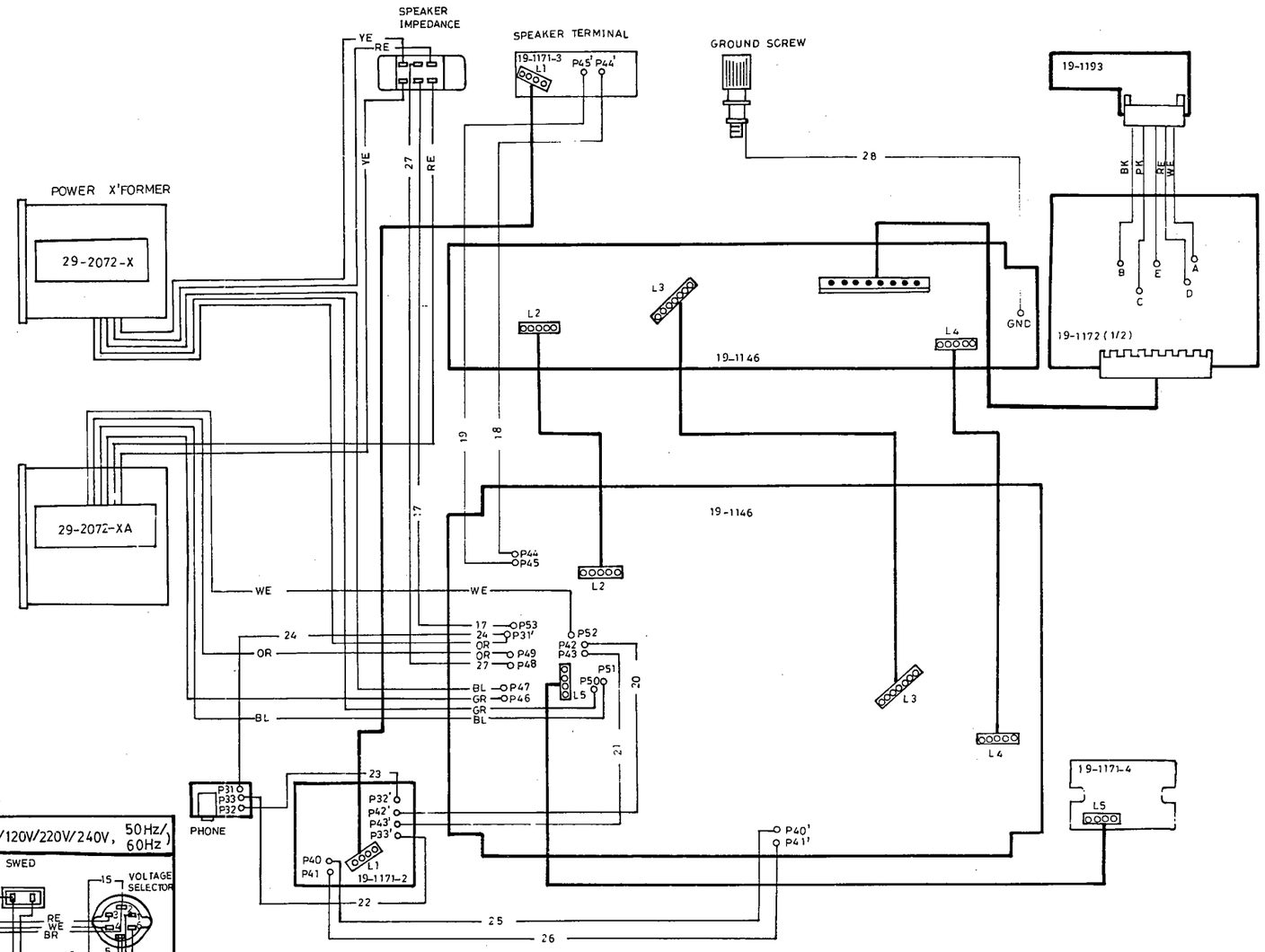


WIRE COLOR ABBREVIATIONS:

BK – BLACK
BR – BRED
RE – RED
OR – ORANGE
YE – YELLOW
GR – GREEN
BL – BLUE
WE – WHITE

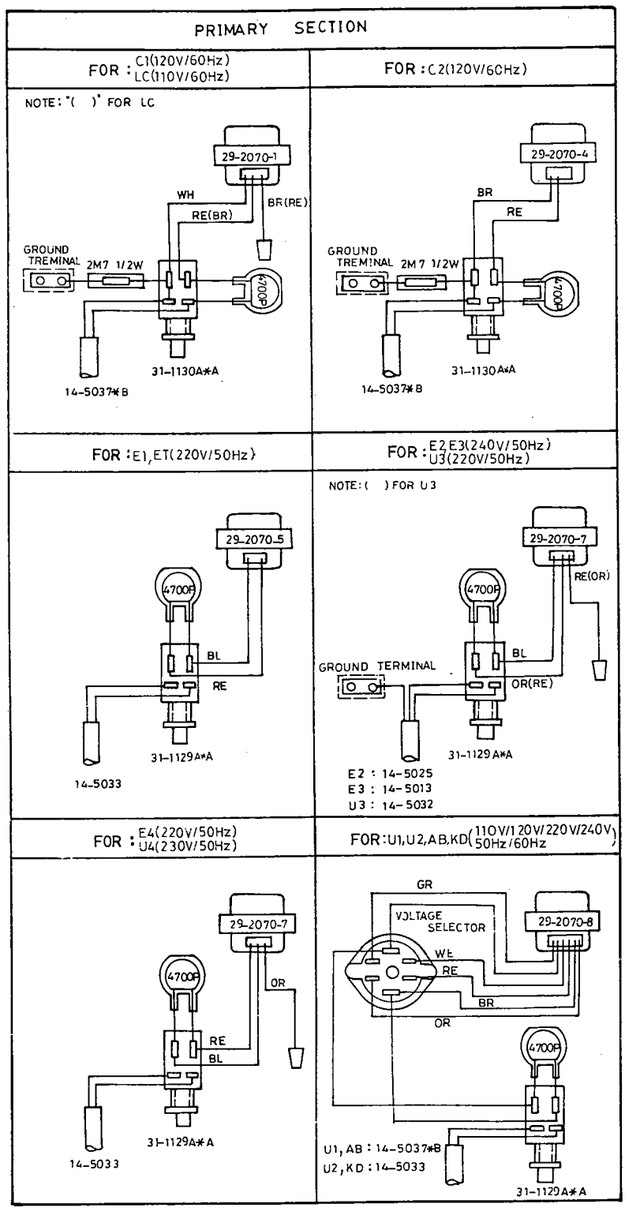
3150 WIRING DIAGRAM

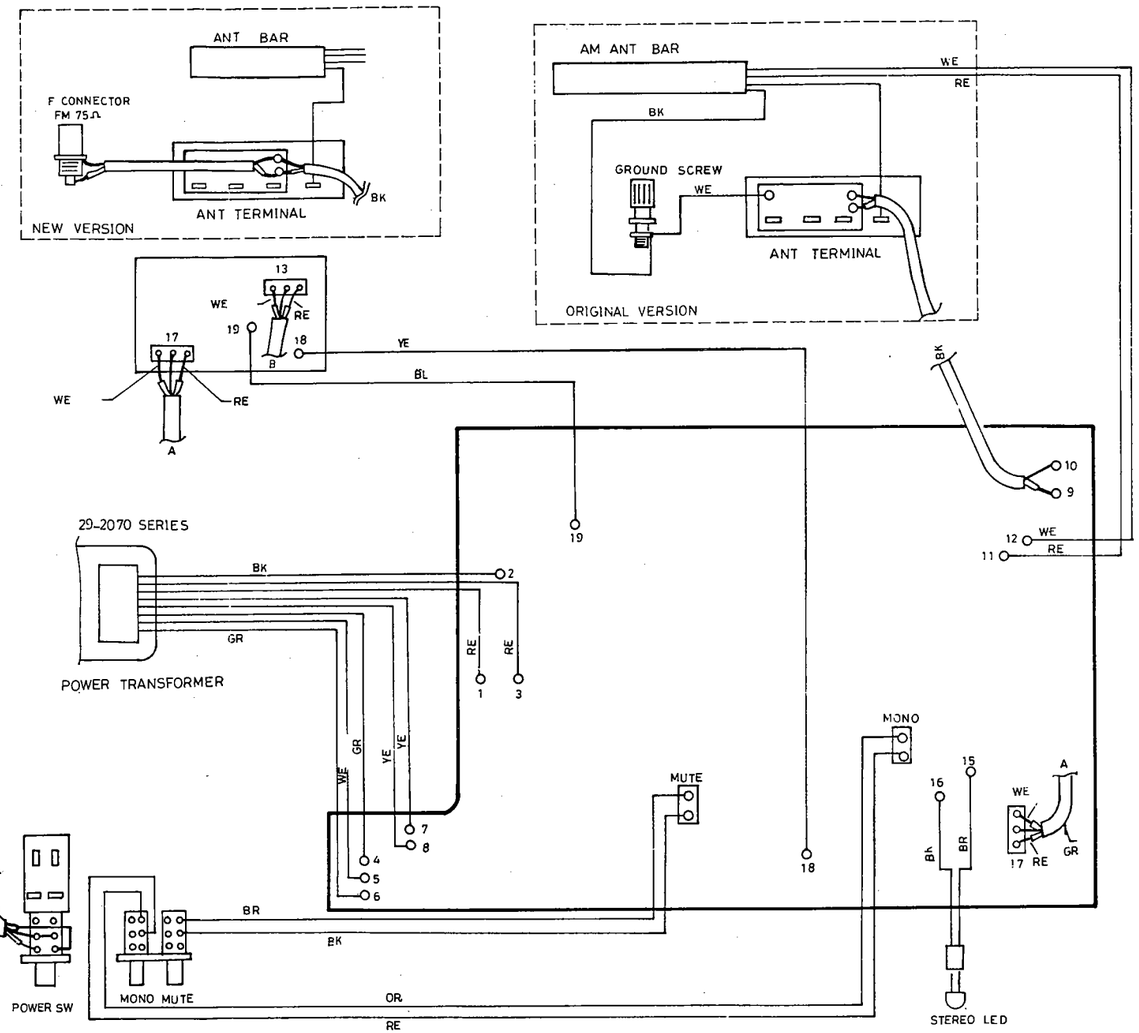




WIRE COLOR ABBREVIATIONS :
BK- BLACK
BR- BROWN
RE- RED
OR- ORANGE
YE- YELLOW
GR- GREEN
BL- BLUE
WE- WHITE
PK- PINK

4150 WIRING DIAGRAM

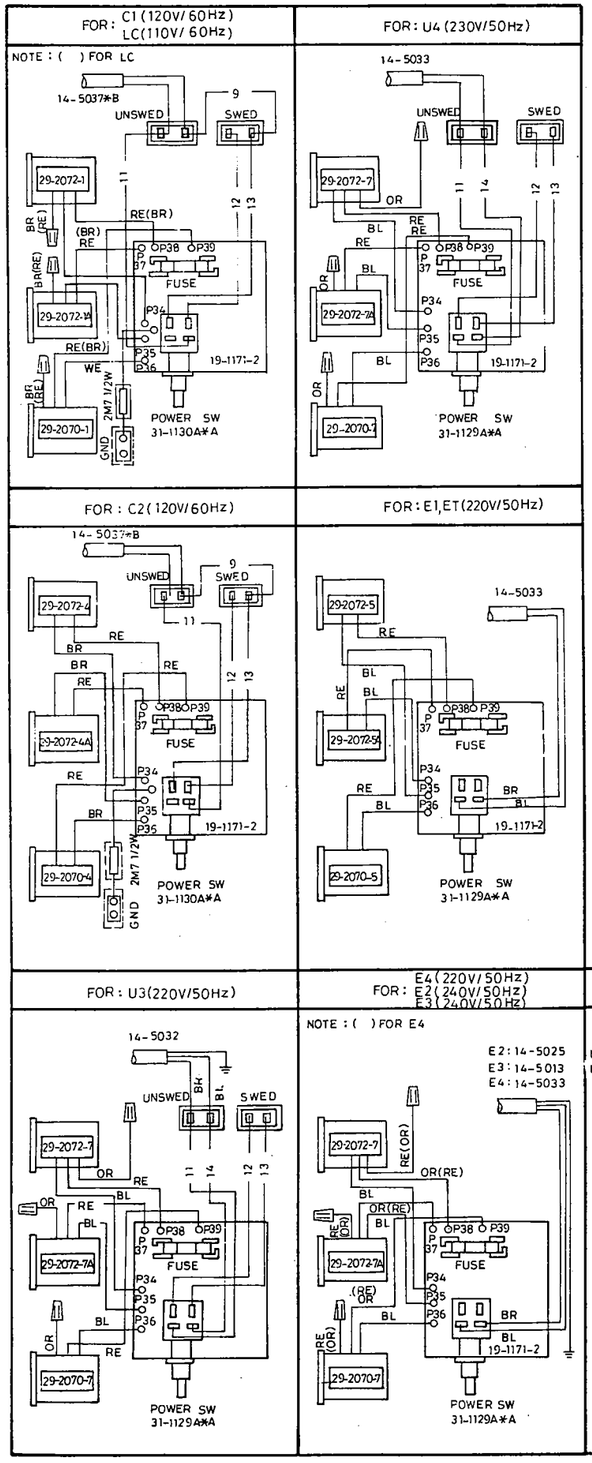


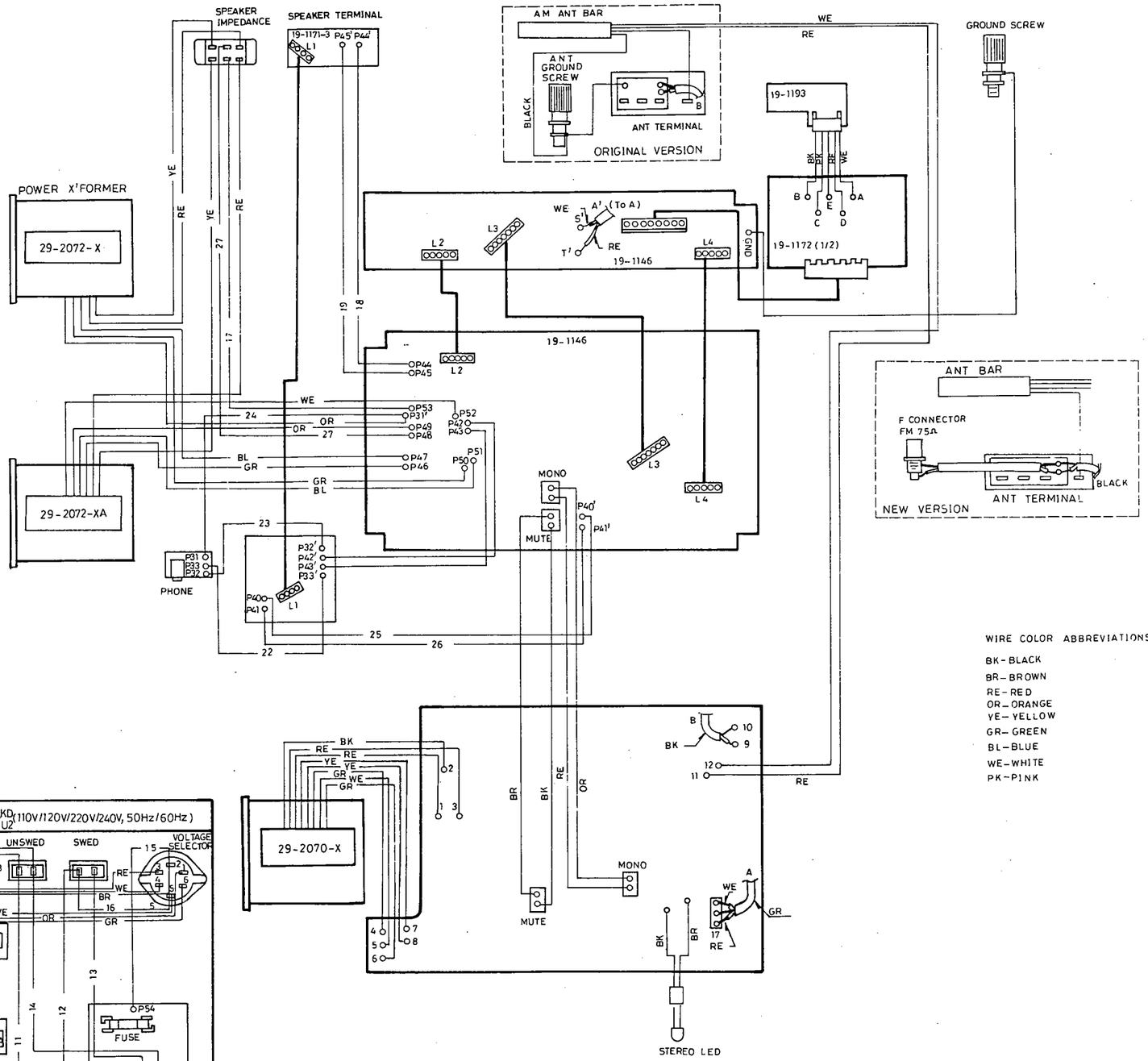


WIRE COLOR ABBREVIATIONS:
BK-BLACK
BR-BROWN
RE-RED
OR-ORANGE
YE-YELLOW
GR-GREEN
BL-BLUE
WE-WHITE
PK-PINK

7150 WIRING DIAGRAM

PRIMARY SECTION

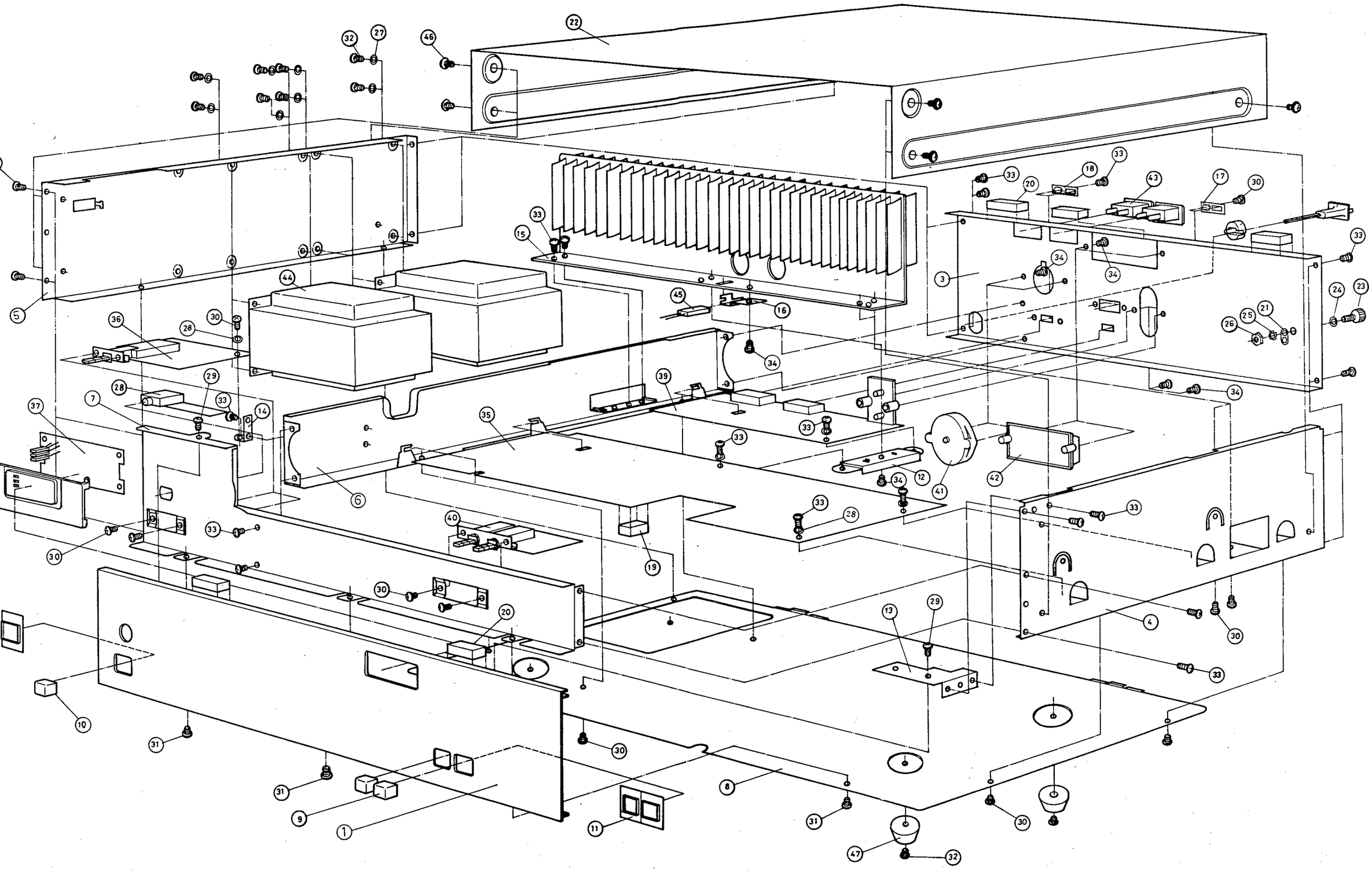




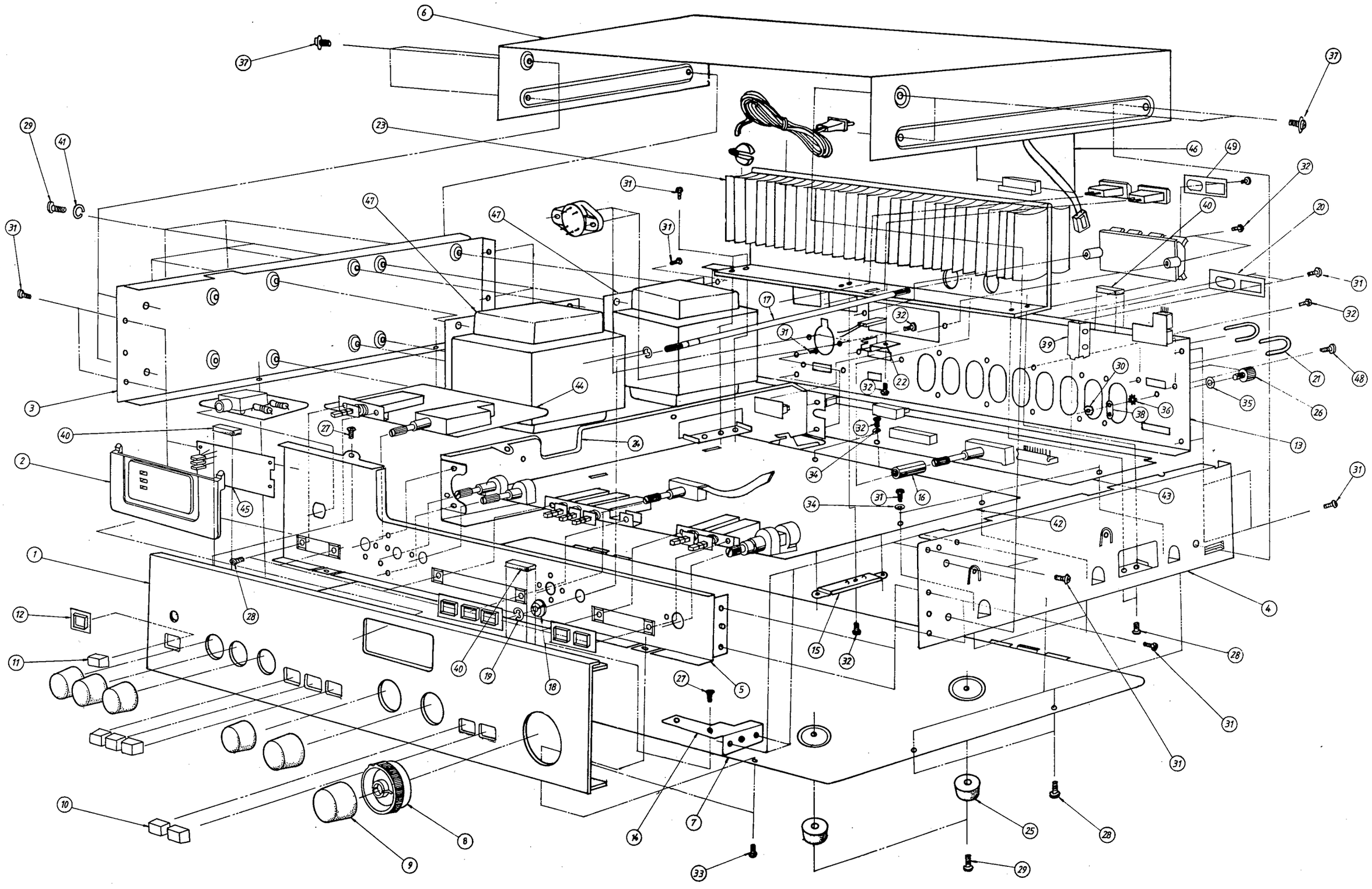
WIRE COLOR ABBREVIATIONS

BK - BLACK
BR - BROWN
RE - RED
OR - ORANGE
YE - YELLOW
GR - GREEN
BL - BLUE
WE - WHITE
PK - PINK

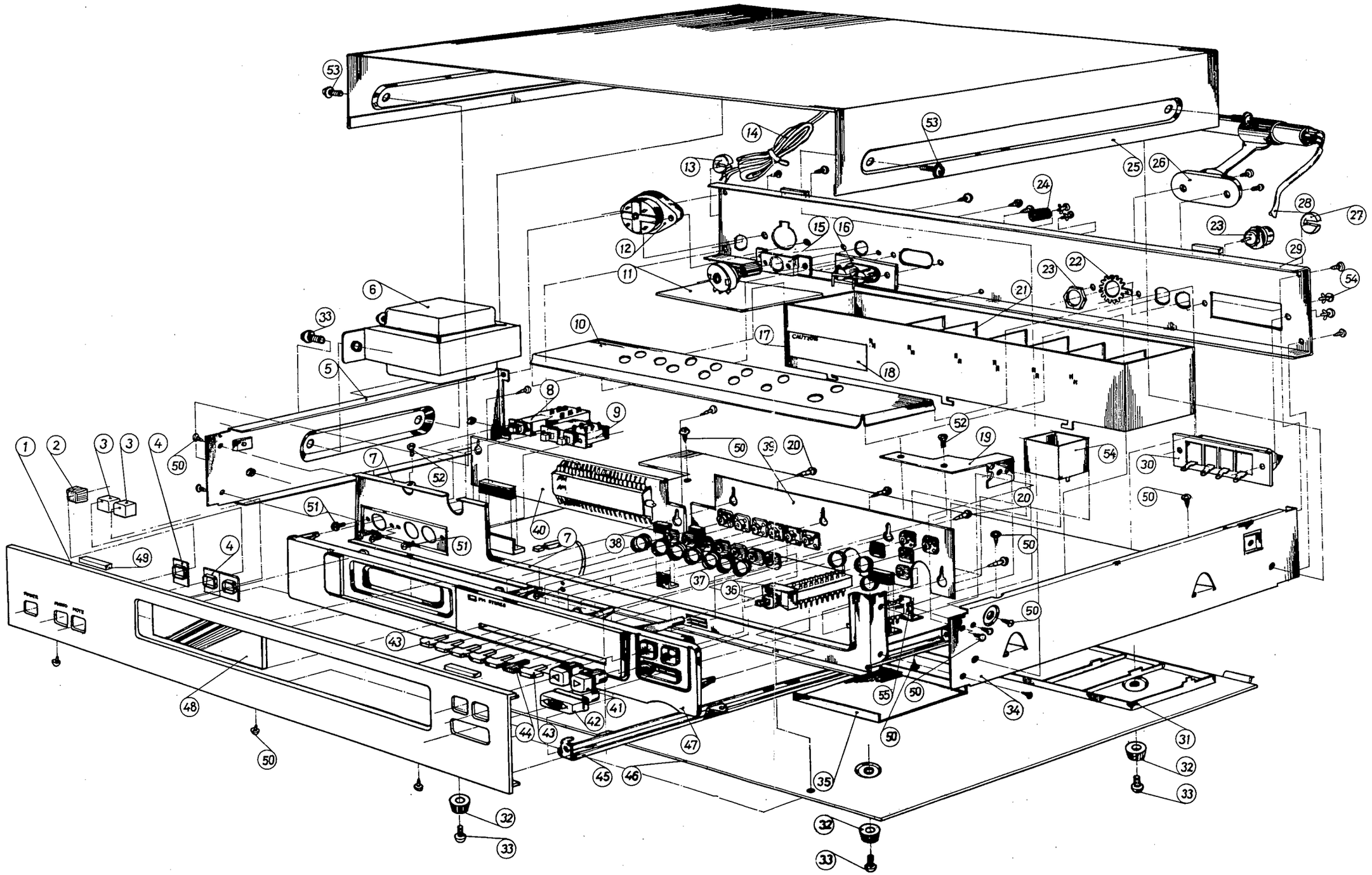
ASSEMBLY DIAGRAM



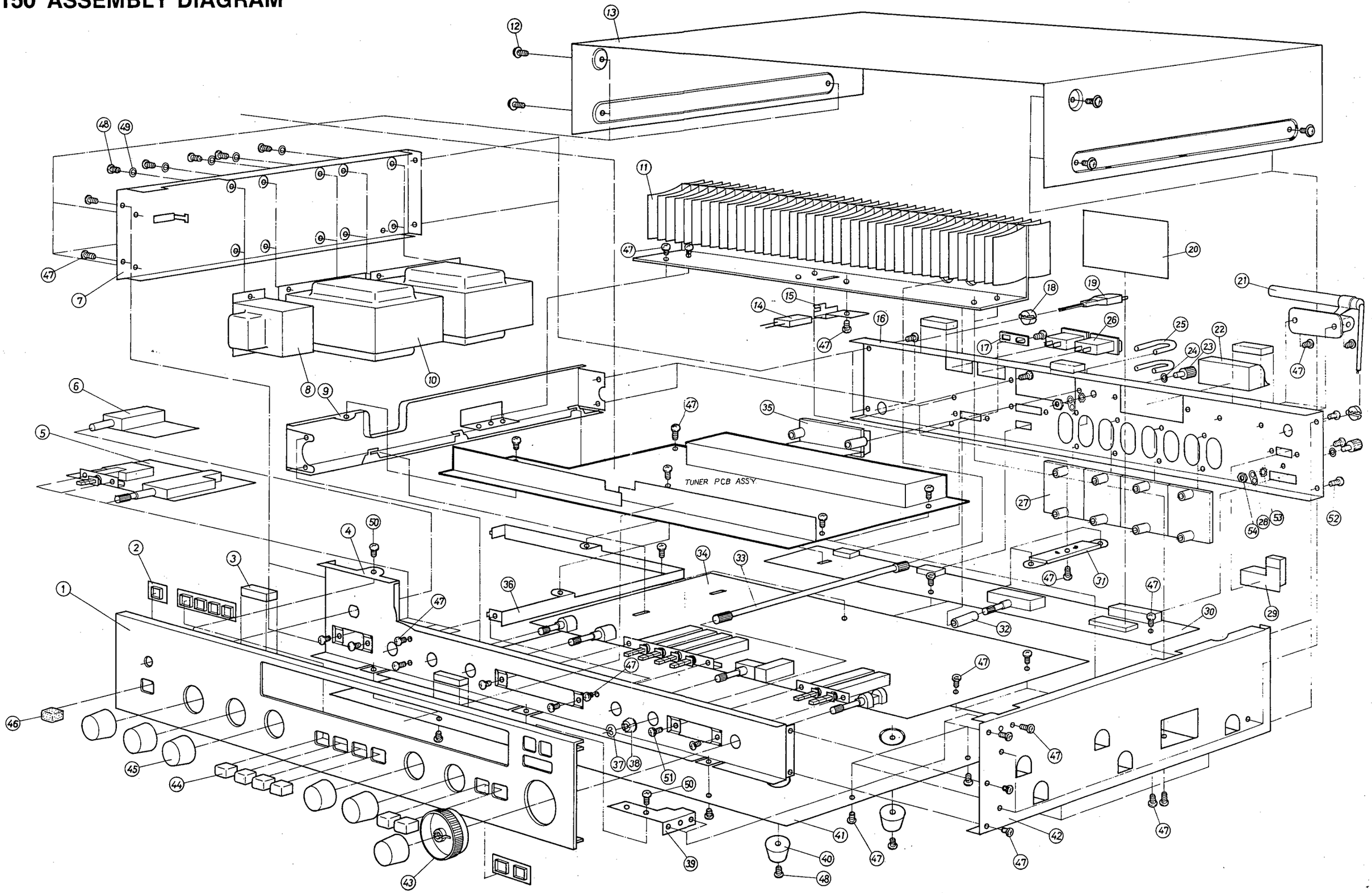
3150 ASSEMBLY DIAGRAM



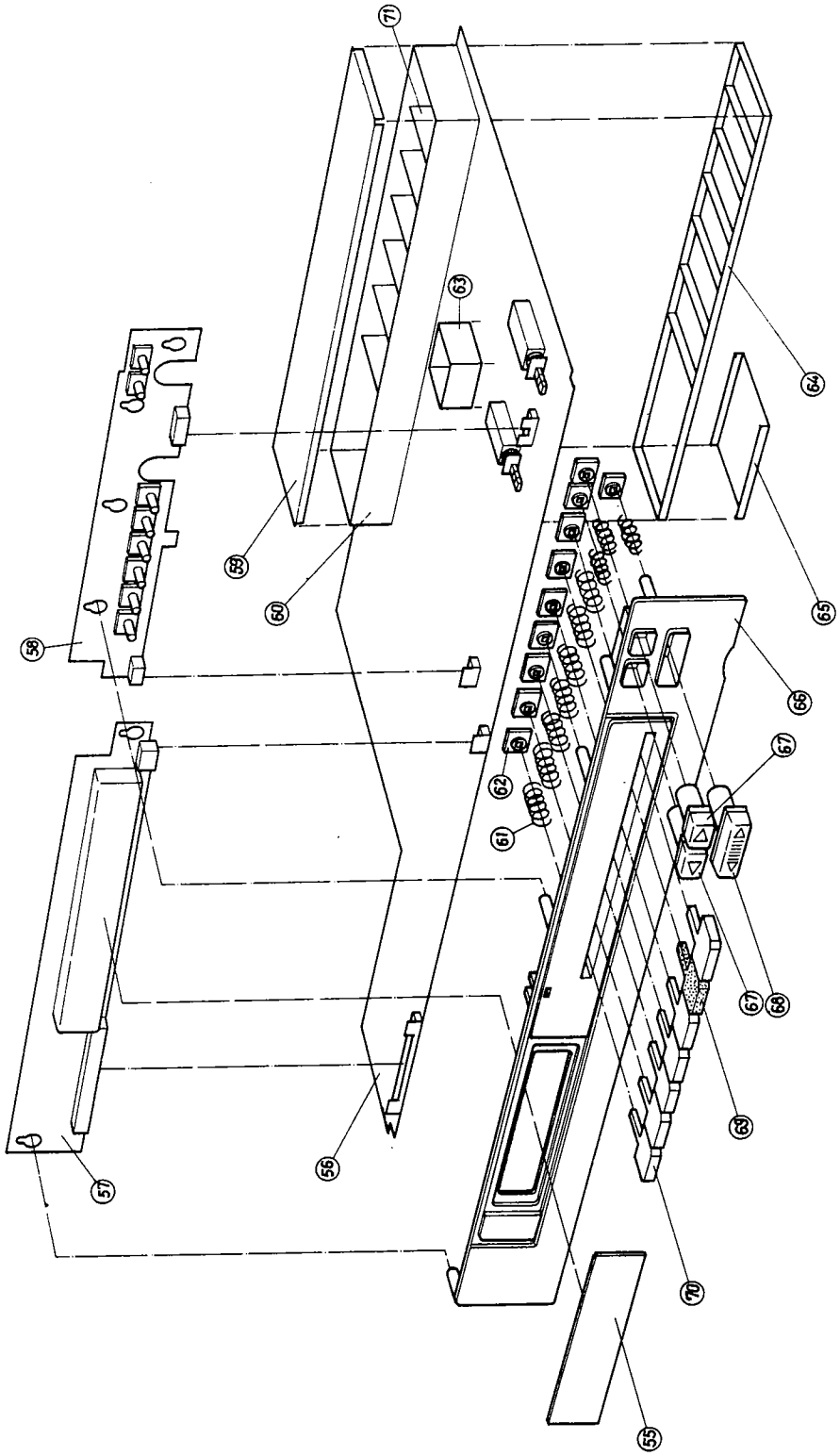
ASSEMBLY DIAGRAM



7150 ASSEMBLY DIAGRAM



7150 SUB-ASSEMBLY DIAGRAM (TUNER PCB)



2150 MECHANICAL PARTS LIST

REF. NO.	DESCIRPTION	RS PART NO.	Q'ty
1	PANEL FRONT	11-8232	1
2	PANEL AUX	11-8233	1
3	PANEL BACK	11-8236	1
4	CHASSIS AUX. R.	11-6112-1	1
5	CHASSIS AUX. L.	11-6119	1
6	CHASSIS CENTER	11-6113	1
7	CHASSIS FRONT	11-6130	1
8	CHASSIS BOTTOM	11-6111	1
9	KNOB PUSH	12-3090	2
10	KNOB PUSH GREEN	12-3090-2	1
11	BUSHING	28-1067	3
12	BKT. FOR PCB	11-2208	1
13	BKT. FOR PNL. FRONT	11-2293	1
14	BRACKET	11-2100	1
15	HEAT SINK	11-5064	1
16	HOLDER RELAY	11-3064	1
17	STOPPER SW. (A)	11-9106	1
18	STOPPER SW. (B)	11-9107	1
19	RETAINER	28-2050	1
20	RETAINER	28-2025	5
21	LUG	11-3026	1
22	CABINET	50-1033	1
23	GROUND SCREW	15-2037	1
24	GROUND WASHER	A3.5A09SN01	1
25	GEAR WASHER	A3.5I07SZ01	1
26	NUT	N3.5B06I2.8SZ	1
27	SPRING WASHER	A04G07SL01	8
28	FIBER WASHER	A03A08F0.5	5
29	MACHINE SCREW F. 3x6	S1E03+I06SL-2	2
30	MACHINE SCREW 3x6	S1B03+I06SL-2	15
31	MACHINE SCREW 3x10	S1B03+I10SL-2	13
32	MACHINE SCREW 4x10	S1B04+I10SL-2	12
33	TAPPING SCREW 3x6	S2B03+I06SL-2	22
34	TAPPING SCREW 3x8	S2B03+I08SL-2	8
35	PCB MAIN --	19-1183-1	1
36	PCB POWER	19-1183-2	1
37	PCB LED	19-1183-4	1
38	PCB PHONE	19-1183-5	1
39	PCB SUB	19-1183-6	1
40	PCB SPK. SW.	19-1183-7	1
41	VOLT. SELECTOR	31-1121	1
42	SPK. TERMINAL	12-2109	1
43	AC OUTLET	12-2121	2
44	TRANSFORMER	29-2072	2
45	THERMAL RELAY	16-2002	1
46	SPECIAL SCREW	15-2062	6
47	RUBBER FOOT	28-1029	4

3150 MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION	RS PART NO.	Q'ty
1	PANEL FRONT	11-8235	1
2	PANEL AUX.	11-8233	1
3	CHASSIS AUX.L	11-6119	1
4	CHASSIS AUX.R	11-6112-1	1
5	CHASSIS FRONT	11-6110	1
6	CABINET	50-1033	1
7	CHASSIS BOTTOM	11-6111	1
8	KNOB BALANCE	12-3071	1
9	KNOB CONTROL	12-3038	6
10	KNOB PUSH	12-3090	5
11	KNOB PUSH GREEN	12-3090-2	1
12	BUSHING	28-1067	6
13	PANEL BACK	11-8234	1
14	BKT. FOR PNL. FRONT	11-2293	1
15	BKT. FOR PCB	11-2208	1
16	TUBE FOR SHAFT	13-7003	1
17	SHAFT	11-7047	1
18	TUBE	12-4027	1
19	E-RING	15-5014	2
20	STOPPER SW.	11-9106	1
21	JUMPER	11-4011	2
22	HOLDER RELAY	11-3064	1
23	HEAT SINK	11-5064	1
24	CHASSIS CENTER	11-6113	1
25	RUBBER FOOT	28-1029	4
26	GROUND SCREW	15-2037	1
27	MACHINE SCREW F. 3x6	S1E03+I06SL-2	2
28	MACHINE SCREW 3x6	S1B03+I06SL-2	16
29	MACHINE SCREW 4x10	S1B04+I10SL-2	12
30	NUT	N3.5B06I2.8SZ	1
31	TAPPINE SCREW 3x6	S2B03+I06SL-2	22
32	TAPPINE SCREW 3x8	S2B03+I08SL-2	16
33	MACHINE SCREW 3x10	S1B03+I10SL-2	13
34	FIBER WASHER	A03AC8F0.5	5
35	GROUND WASHER	A3.5A09SN01	1
36	GEAR WASHER	A3.5I07SZ01	1
37	SPECIAL SCREW	15-2062	6
38	LUG	11-3026	1
39	SHEEL PLATE	11-9104	1
40	RETAINER	28-2025	5
41	SPRING WASHER	A04G07SL01	8
42	PCB MAIN	19-1146	1
43	PCB SUB	19-1146	1
44	PCB POWER	19-1171	1
45	PCB LED	19-1171	1
46	PCB PHONO	19-1172	1
47	TRANSFORMER	29-2072	2
48	MACHINE SCREW 2.6x4	S1B2.6+I04SL-2	2
49	STOPPER SW.	11-9107	1

4150 MECHANICAL PARTS LIST

REF. NO.	DESCIRPTION	RS PART NO.	Q'ty
1	FRONT PANEL	11-8230	1
2	POWER KNOB GREEN	11-3090-2	1
3	PUSH KNOB BLACK	12-3090	2
4	BUSHING FOR PUSH KNOB	28-1067	3
5	LEFT CHASSIS	11-6182	1
6	TRANSFORMER	29-2070	1
7	FRONT CHASSIS	11-6125	1
8	POWER SWITCH	31-1129A	1
9	PUSH SWITCH 2P	31-1236	1
10	METAL COVER	11-1011	1
11	BUFFER PCB ASS'Y	90-1192	1
12	VOLTAGE SELECTOR SWITCH	31-1121	1
13	BUSHING 4N4	14-5003	1
14	POWER CORD	14-5037	1
15	BRACKET FOR O/P	11-2295	1
16	RCA JACK 2P	12-2110	1
17	SHIELD CASE	11-9101	1
18	CAUTION LABEL	21-2295	1
19	BRACKET FOR FRONT PANEL	11-2287	1
20	RIVET 2.5ø x14L	15-2061	6
21	INNER SHIELD PLATE	11-9100	6
22	LUG	11-3033	1
23	CONNECTOR & NUT	12-1032	1
24	KNOB FOR O/P	12-3147	1
25	CABINET	50-1035	1
26	AM ANT	29-5010	1
27	BUSHING 5N4	14-5005	1
28	TUBING 6.5ø PVC	W8-0A65	1
29	BACK PANEL	11-8237	1
30	ANT TERMINAL	12-2012	1
31	BOTTOM SHIELD	11-9102	1
32	RUBBER FOOT	28-1029	4
33	MACHINE SCREW M4x8	S1B04+I08SL-2	6
34	RIGHT CHASSIS	11-6126	1
35	SHIELD FOR OSC	11-9105	1
36	BAND SWITCH	31-1237	1
37	BUSHING FOR KNOB	28-1065	10
38	SPRING FOR KNOB	12-5036	10
39	SWITCH PCB ASS'Y	90-1157	1
40	DISPLAY PCB ASS'Y	90-1155	1
41	UP/DOEN KNOB	12-3124	2
42	SEARCH KNOB	12-3126	1
43	PUSH KNOB BLACK	12-3127	6
44	PUSH KNOB BROWN	12-3127-1	1
45	CENTER CHASSIS	11-6129	1
46	BOTTOM CHASSIS	11-6127	1
47	AUXILART PANEL	11-8204-2	1
48	ACRY WINDOW	11-8203	1
49	RETAINER	28-2090	4
50	TAPPING SCREW T3x8	S2B03+I08SL-2	29
51	MACHINE SCREW M3x6	S1B03+I06SL-2	6

REF. NO.	DESCIRPTION	RS PART NO.	Q'ty
52	FLAT SCREW M3x6	S1E03+I06SZ-2	2
53	SPECIAL SCREW M4x8	15-2051	4
54	SHIELD PLATE FOR IF	11-9098	1
55	BRACKET FOR SEARCH SW.	11-2290	1

7150 MECHANICAL PARTS LIST

REF. NO.	DESCRIPTION	RS PART NO.	Q'ty
1	PRONT PANEL	11-8205	1
2	BUSHING	28-1067	7
3	RETAINER	28-2090	4
4	PRONT CHASSIS	11-6110	1
5	POWER SW. PCB ASS'Y	90-1171	2/3
6	HEADPHONE JACK PCB ASS'Y	90-1171	1/3
7	LEFT CHASSIS	11-6119	1
8	TUNER'S POWER TRANSFORMER	29-6070	1
9	CENTER CHASSIS	11-6113	1
10	POWER TRANSFORMER	29-2072	2
11	HEAT SINK	11-5064	1
12	SPECIAL SCREW	15-2062	6
13	CABINET	50-1033	1
14	THERMAL PROTECTOR RELAY	16-2002	1
15	HOLDER FOR THERMAL RELAY	11-3064	1
16	BACK PANEL	11-8206	1
17	STOPPER FOR SW.	11-9107	1
18	BUSHING 4N-4	14-5003	1
19	POWER CORD	14-5037	1
20	PHONO PCB ASS'Y	90-1172	1
21	AM. ANT	29-5010	1
22	ANT. TERMINAL	12-2012	1
23	GROUND SCREW	15-2037	1
24	WASHER ø3.5x9x1T	A3.5A09SN01	6
25	JUMPER	11-4011	2
26	RECEPTACLE UL/CSA IR19-1	12-2121	2
27	RCA JACK (4P)	12-2092	4
28	LUG	11-3026	2
29	MC/MM PCB ASS'Y	90-1193	1
30	MAIN PCB ASS'Y	90-1146	1/3
31	HOLD FOR PCB	11-2208	1
32	TUBE	12-7003	1
33	SHAPT	11-4047	1
34	MAON PCB ASS'Y	90-1146	2/3
35	SPEAKWES TERMINAL (8P)	12-2109	1
36	BRACKET FOR PCB	11-2234	1
37	E-RING 5ø	15-5014	1
38	TUBE FOR SHAFT	13-4027	1
39	BRACKET FOR FRONT PANEL	11-2293	1
40	RUBBER FOOT	28-1029	4
41	BOTTOM CHASSIS	11-6111	1
42	RIGHT CHASSIS	11-6112	1
43	BALANCE KNOB	12-3071-1	1
44	PUSH KNOB BLACK	12-3090	6
45	CONTROL KNOB	12-3038	6
46	PUSH KNOB GREEN	12-3090-2	1
47	TAPPING SCREW T3x6	S2B03+I06SL-2	28
48	MACHINE SCREW M4x8	S1B04+I08SL-2	14
49	S./WASHER ø4x8x1	A04G07SL01	10
50	FLAT SCREW M3x6	S1E03+I06SZ-2	2
51	MACGINE SCREW M3x6	S1B03+I06SL-2	28

REF. NO.	DESCRIPTION	RS PART NO.	Q'ty
52	TAPPING SCREW T3xb	S2B03+I08SL-2	10
53	GEAR WASHER	A3.5107SZ01	2
54	NUT ø3.5x7	N3.5B0612.8SZ	2
55	ACRT SCALE	11-8203	1
56	TUNER PCB ASS'Y	90-1156	1
57	DISPLAT PCB ASS'Y	90-1155	1
58	TOUCH SW. PCB ASS'Y	90-1157	1
59	METAL COVER	11-1101	1
60	SHIELD CASE	11-9011	1
61	SPRING FOR KNOB	19-5036	10
62	BUSHING FOR KNOB	28-1065	3
63	SHIELD PLATE FOR IF.	11-9098	1
64	BOTTOM SHIELD	11-9102	1
65	SHIELD FOR OSC	11-9105	1
66	AUXILIARY PANEL	11-8204	1
67	UP/DOWE KNOB	12-3124	2
68	SEARCH KNOB	12-3126	1
69	PUSH KNOB BROWN	12-3127-1	1
70	PUSH KNOB BLACK	12-3127	1
71	INNER SHIELD PLATE	11-9100	6

2150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R601 R602	16-¼CA224J	220K OHM	
R603 R604	16-¼CA822J	8K2 OHM	
R605-R608	16-¼CA222J	2K2 OHM	
R609 R610	16-¼CA391J	390 OHM	
R611-R614	16-¼CA223J	22K OHM	
R615 R616	16-¼CA183J	18K OHM	
R617 R618	16-¼CA391J	390 OHM	
R619 R620	16-¼CA152J	1K5 OHM	
R621 R622	16-¼CA331J	330 OHM	
R623 R624	16-¼CA390J	39 OHM	
R625-R628	16-2AS821J	Metal oxide 2W 820 OHM +-5%	
R629 R630	16-2AS152J	Metal oxide 2W 1K5 OHM +-5%	
R631 R632	16-¼CN561J	560 OHM	
R633 R634	16-¼CN101J	100 OHM	
R635 R636	16-¼CN330J	33 OHM	
R637 R638	16-¼CN122J	1K2 OHM	
R639 R640	16-¼CA331J	330 OHM	
R641 R642	16-2AS122J	Metal oxide 2W 1K2 OHM +-5%	
R643 R644	16-½CN181J	½W 180 OHM	
R645-R648	16-1033	Wirewound 5W+5W 0.22 OHM +-5%	
R649 R650	16-¼CA152J	1K5 OHM	
R651 R652	16-1AS100J	Metal oxide 1W 10 OHM +-5%	
R653 R654	16-¼CA183J	18K OHM	
R655	16-¼CA330J	33 OHM	
R656	16-¼CR682J	6K8 OHM	
R657	16-¼CR333J	33K OHM	
R659 R660	16-1AS3R3J	Metal oxide 1W 3.3 OHM +-5%	
R661 R662	16-1AS471J	Metal oxide 1W 470 OHM +-5%	
R663	16-¼CA473J	47K OHM	
R664 R665	16-¼CA563J	56K OHM	
R666	16-¼CA562J	5K6 OHM	
R667	16-¼CA563J	56K OHM	
R668	16-¼CA183J	18K OHM	
R669	16-¼CA473J	47K OHM	
R670	16-¼CA183J	18K OHM	
R671	16-¼CA224J	220K OHM	
R672	16-¼CA333J	33K OHM	
R673	16-¼CA563J	56K OHM	
R674	16-¼CA562J	5K6 OHM	
R675	16-¼CA153J	15K OHM	
R676	16-2AS681J	Metal oxide 2W 680 OHM +-5%	
R677	16-¼CA151J	150 OHM	
R678 R679	16-¼CA102J	1K OHM	
R680	16-¼CA151J	150 OHM	
R681 R682	16-¼CA332J	3K3 OHM	
R683	16-½CS123J	½W 12K OHM	
R803	16-¼CR473J	47K OHM	
R804	16-¼CA473J	47K OHM	
R805	16-¼CR824J	820K OHM	
R806	16-¼CA332J	3K3 OHM	

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R807	16-¼CA823J	82K OHM	
R808	16-¼CA152J	1K5 OHM	
R810 R811	16-¼CA122J	1K2 OHM	
R812	16-1AS100J	Metal oxide 1W 10 OHM +-5%	
R833	16-1AS100J	Metal oxide 1W 10 OHM +-5%	
R834	16-½CS123J	½W 12K OHM	
R835	16-¼CA332J	3K3 OHM	
R850 R851	16-½AN3R3J	Metal oxide ½W 3.3 OHM +-5%	
CAPACITORS			
C601-C604	17-1.6R105K	Electrolytic solid 1uF 16V +-10%	
C605 C606	17-5FF122J	Mylar 0.0012uF 50V +-5%	
C607 C608	17-5DR821K	Ceramic 820pF 50V +-10%	
C609 C610	17-5FF102J	Mylar 0.001uF 50V +-5%	
C611 C612	17-5DR470M	Ceramic 47pF 50V +-20%	
C613 C614	17-0.63EF108Y	Electrolytic 1000uF 6.3V +50-10%	
C615 C616	17-5FF102J	Mylar 0.001uF 50V +-5%	
C617 C618	17-5DH104Z	Ceramic 0.1uF 50V +80-20%	
C619	17-6.3EF476Y	Electrolytic 47uF 63V +50-10%	
C621 C622	17-5DR101M	Ceramic 100pF 50V +-20%	
C623 C624	17-5DH104Z	Ceramic 0.1uF 50V +80-20%	
C625 C626	17-5ER476Y	Electrolytic 47uF 50V +50-10%	
C627-C630	17-5DR470M	Ceramic 47pF 50V +-20%	
C631-C640	17-5DH104Z	Ceramic 0.1uF 50V +80-20%	
C641	17-5ER106Y	Electrolytic 10uF 50V +50-10%	
C642 C643	17-1ER476Y	Electrolytic 47uF 10V +50-10%	
C644 C645	17-5ER476Y	Electrolytic 47uF 50V +50-10%	
C646	17-5ER474Y	Electrolytic 0.47uF 50V +50-10%	
C647	17-1ER226Y	Electrolytic 22uF 10V +50-10%	
C648 C649	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C650 C651	17-5DH104Z	Ceramic 0.1uF 50V +80-20%	
C652-C654	17-5DR101M	Ceramic 100pF 50V +-20%	
C803 C804	17-5ER476Y	Electrolytic 47uF 50V +50-10%	
C807 C808	17-5ER106Y	Electrolytic 10uF 50V +50-10%	
C809	17-5DR220M	Ceramic 22pF 50V +-20%	
C811	17-5ER476Y	Electrolytic 47uF 50V +50-10%	
C815 C816	17-6.3EG477Y	Electrolytic 470uF 63V +50-10%	
C817 C820	17-5P478Y	Electrolytic 4700uF 50V +50-10%	
C821	17-5ER105Y	Electrolytic 1uF 50V +50-10%	
C822 C823	17-2014	Ceramic 4700pF 400VAC KC	
	17-2011	Ceramic 4700pF 125VAC MY	
C832	17-5DH104Z	Ceramic 0.1uF 50V +80-20%	
INTEGRATED CIRCUITS			
IC701	30-3187	Protector TA7317P	
IC801	30-3178	Regulator M5231L	
IC802	30-3213	Regulator MC78M24CT/AN7824	

REF.NO.	PART NO.	DESCRIPTION	NOTE
COILS			
L601 L602	29-1147	Air 1.2¢x6.9(12.6)Dx30T	
VARIABLE RESISTORS			
VR601 VR602	29-4168	Semi 8¢ 500B Flat	
VR603 VR604	29-4170	Semi 8¢ 100B Flat	
DIODES			
D601-D612	30-1019-1	BAW62/BAW76	
D613 D614	30-1038	Zener 18V ½W RD18EB3	
D615	30-1002	Rectifier 100V 1A 1N4002/10D1	
D801-D804	30-1002	Rectifier 100V 1A 1N4002/10D1	
D805-D808	30-1017-1	Rectifier 100V 3A G3B	
D809	30-1002	Rectifier 100V 1A 1N4002/10D1	
LEDS			
LD601	30-1085	Green LT3231G/X-253FG	
LD602	30-1075	Red LT3211R/X-253FPR	
LD801	30-1075	Red LT3211R/X-253FPR	
TRANSISTORS			
Q601 Q602	30-2096	BC556B	
Q603 Q604	30-2090-2	BC546B	
Q605 Q606	30-2238	BF423	
Q607-Q610	30-2260	2SD669C/2SD669D	
Q611 Q612	30-2259	2SB649C/2SB649D	
Q613 Q614	30-2260	2SD669C/2SD649D	
Q615 Q616	30-2305	2SC2921	
Q617 Q618	30-2304	2SA1215	
Q619 Q620	30-2090-2	BC546B	
Q621	30-2096	BC556B	
Q801	30-2260	2SD669C/2SD669D	
Q802	30-2096	BC556B	
Q803	30-2259	2SB649C/2SB649D	
SWITCHES			
SW601 SW602	31-1226	Slide SSP22FL080	
SW603 SW604	31-1263	Push SUF22CA003-FL	

7150 AUDIO / 3150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R401 R402	16-¼CA473J	47K OHM	
R403 R404	16-¼CA220J	22 OHM	
R405 R406	16-¼CR271J	270 OHM	
R407 R408	16-¼CR392J	3K9 OHM	
R409	16-¼CA181J	180 OHM	
R410	16-¼CR181J	180 OHM	
R411	16-¼CA181J	180 OHM	
R412	16-¼CU181J	180 OHM	
R413 R414	16-¼CR201J	200 OHM	
R415 R416	16-¼CR103J	10K OHM	
R417	16-¼CA121J	120 OHM	
R418	16-¼CR121J	120 OHM	
R419	16-¼CA151J	150 OHM	
R420	16-¼CU151J	150 OHM	
R421 R422	16-¼CA121J	120 OHM	
R423 R424	16-¼CA221J	220 OHM	
R425	16-¼CA153J	15K OHM	
R426	16-¼CR153J	15K OHM	
R427	16-¼CN680J	68 OHM	
R428-R430	16-¼CR680J	68 OHM	
R431 R432	16-¼CR681J	680 OHM	
R433 R434	16-¼CA104J	100K OHM	
R435	16-¼CA103J	10K OHM	
R436	16-¼CR103J	10K OHM	
R437 R438	16-¼CR151J	150 OHM	
R439 R440	16-¼CR124J	120K OHM	
R442	16-¼CR102J	1K OHM	
R443-R446	16-¼CA102J	1K OHM	
R501 R502	16-¼CA151J	150 OHM	
R503 R504	16-¼CA334J	330K OHM	
R505 R506	16-¼CA823J	82K OHM	
R507 R508	16-¼CR184J	180K OHM	
R509 R510	16-¼CR151J	150 OHM	
R511 R512	16-¼CA562J	5K6 OHM	
R515	16-¼CR332J	3K3 OHM	
R516	16-¼CA332J	3K3 OHM	
R517 R518	16-¼CA222J	2K2 OHM	
R519 R520	16-¼CR154J	150K OHM	
R521 R522	16-¼CR105J	1M OHM	
R523 R524	16-¼CA101J	100 OHM	
R525 R526	16-¼CA822J	8K2 OHM	
R527 R528	16-¼CA562J	5K6 OHM	
R529 R530	16-¼CA181J	180 OHM	
R533 R534	16-¼CA102J	1K OHM	
R535 R536	16-¼CA473J	47K OHM	
R537 R538	16-¼CA332J	3K3 OHM	
R541 R542	16-¼CA561J	560 OHM	
R543 R544	16-¼CA682J	6K8 OHM	
R545	16-¼CA681J	680 OHM	
R546	16-¼CR681J	680 OHM	

7150 AUDIO / 3150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R547	16-¼CR102J	1K OHM	
R548	16-¼CA102J	1K OHM	
R549	16-¼CA223J	22K OHM	
R550	16-¼CA273J	27K OHM	
R551	16-¼CA123J	12K OHM	
R552	16-¼CA104J	100K OHM	
R554	16-¼CR561J	560 OHM	
R555	16-¼CA561J	560 OHM	
R556 R557	16-¼CR332J	3K3 OHM	
R559 R560	16-¼CA272J	2K7 OHM	
R561	16-¼CR334J	330K OHM	
R562	16-¼CA334J	330K OHM	
R601 R602	16-¼CA224J	220K OHM	
R603 R604	16-¼CA822J	8K2 OHM	
R605-R608	16-¼CA222J	2K2 OHM	
R609 R610	16-¼CA391J	390 OHM	
R611-R614	16-¼CA223J	22K OHM	
R615 R616	16-¼CA183J	18K OHM	
R617 R618	16-¼CA391J	390 OHM	
R619 R620	16-¼CA152J	1K5 OHM	
R621 R622	16-¼CA331J	330 OHM	
R623 R624	16-¼CA390J	39 OHM	
R625-R628	16-2AS821J	Metal oxide 2W 820 OHM	+-5%
R629 R630	16-2AS152J	Metal oxide 2W 1K5 OHM	+-5%
R631 R632	16-¼CN561J	560 OHM	
R633 R634	16-¼CN101J	100 OHM	
R635 R636	16-¼CN330J	33 OHM	
R637 R638	16-¼CN122J	1K2 OHM	
R639 R640	16-¼CA331J	330 OHM	
R641 R642	16-2AS122J	Metal oxide 2W 1K2 OHM	+-5%
R643 R644	16-¼CN181J	½W 180 OHM	
R645-R648	16-1033	WIREWOUND 5W+5W 0.22 OHM	
R649 R650	16-¼CA152J	1K5 OHM	
R651 R652	16-1AS100J	Metal oxide 1W 10 OHM	+-5%
R653 R654	16-¼CA103J	10K OHM	
R655	16-¼CA330J	33 OHM	
R656	16-¼CR682J	6K8 OHM	
R657	16-¼CR333J	33K OHM	
R659 R660	16-1AS3R3J	Metal oxide 1W 3.3 OHM	+-5%
R661 R662	16-1AS471J	Metal oxide 1W 470 OHM	+-5%
R663	16-¼CA473J	47K OHM	
R664 R665	16-¼CA563J	56K OHM	
R666	16-¼CA562J	5K6 OHM	
R667	16-¼CA563J	56K OHM	
R668	16-¼CA183J	18K OHM	
R669	16-¼CA473J	47K OHM	
R670	16-¼CA183J	18K OHM	
R671	16-¼CA224J	220K OHM	
R672	16-¼CA333J	33K OHM	
R673	16-¼CA563J	56K OHM	
R674	16-¼CA562J	5K6 OHM	

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
*R675	16-¼CA153J	15K OHM	
R676	16-2AS681J	Metal oxide 2W 680 OHM	+-5%
R677	16-¼CA151J	150 OHM	
R678 R679	16-¼CA102J	1K OHM	
R680	16-¼CA151J	150 OHM	
R681 R682	16-¼CA332J	3K3 OHM	
*R683	16-¼CS123J	½W 12K OHM	
^R683	16-1AS682J	Metal oxide 1W 6K8 OHM	+-5%
R801 R802	16-¼CA473J	47K OHM	
R803	16-¼CR473J	47K OHM	
R804	16-¼CA473J	47K OHM	
R805	16-¼CR824J	820K OHM	
R806	16-¼CA332J	3K3 OHM	
R807	16-¼CA823J	82K OHM	
R808 R809	16-¼CA152J	1K5 OHM	
R810 R811	16-¼CA122J	1K2 OHM	
R812	16-1AS100J	Metal oxide 1W 10 OHM	+-5%
R813 R814	16-¼CA122J	1K2 OHM	
R815	16-¼CA153J	15K OHM	
R829	16-3AN471J	Metal oxide 3W 470 OHM	+-5%
R831	16-3AN561J	Metal oxide 3W 560 OHM	+-5%
R833	16-1AS100J	Metal oxide 1W 10 OHM	+-5%
*R834	16-¼CS123J	½W 12K OHM	
R835	16-¼CA332J	3K3 OHM	
R836	16-¼CR824J	820K OHM	
^R840	16-½CP275J	½W 2M7 OHM	
R850 R851	16-½AN3R3J	Metal oxide ½W 3.3 OHM	+-5%
CAPACITORS			
C401 C402	17-5DR101M	Ceramic 100pF 50V	+-20%
C403 C404	17-5DR221M	Ceramic 220pF 50V	+-20%
C405 C406	17-5DR101M	Ceramic 100pF 50V	+-20%
C407 C408	17-3.5ER106Y	Electrolytic 10uF 35V	+50-10%
C409 C410	17-0.63EF108Y	Electrolytic 1000uF 6.3V	+50-10%
C411 C412	17-5DR150M	Ceramic 15pF 50V	+-20%
C413 C414	17-5DR221M	Ceramic 220pF 50V	+-20%
C415 C416	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C417 C418	17-5FF222J	Mylar 0.0022uF 50V	+-5%
C419 C420	17-1.6ER106Y	Electrolytic 10uF 16V	+50-10%
C421 C422	17-5FF752J	Mylar 0.0075uF 50V	+-5%
C423 C424	17-5FF273J	Mylar 0.027uF 50V	+-5%
C425	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C501 C502	17-5FF122J	Mylar 0.0012uF 50V	+-5%
C503 C504	17-5FH224J	Mylar 0.22uF 50V	+-5%
C505 C506	17-5ER105Y	Electrolytic 1uF 50V	+50-10%
C507-C510	17-5FF124J	Mylar 0.12uF 50V	+-5%
C511 C512	17-5DR221M	Ceramic 220pF 50V	+-20%
C513	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C515 C516	17-5DR150M	Ceramic 15pF 50V	+-20%

Note:1.Asterisk * denotes for 3150 only 2.Delta ^ denotes for 7150 only

REF. NO.	PART NO.	DESCRIPTION	NOTE
CAPACITORS			
C517 C518	17-5ER105Y	Electrolytic 1uF 50V	+50-10%
C519-C522	17-5FH334J	Mylar 0.33uF 50V	+-5%
C523 C524	17-5DR221M	Ceramic 220pF 50V	+-20%
C525 C526	17-2.5ER476Y	Electrolytic 47uF 25V	+50-10%
C527 C528	17-5DR470M	Ceramic 47pF 50V	+-20%
C529-C534	17-1ER476Y	Electrolytic 47uF 10V	+50-10%
C535 C536	17-5FF183J	Mylar 0.018uF 50V	+-5%
C537 C538	17-5FF104J	Mylar 0.1uF 50V	+-5%
C539 C540	17-1ER107Y	Mylar 100uF 10V	+50-10%
C541 C542	17-5FF124J	Mylar 0.12uF 50V	+-5%
C543 C544	17-1.6R684K	Electrolytic solid 0.68uF 16V	+-10%
C545	17-1ER107Y	Electrolytic 100uF 10V	+50-10%
C601-C604	17-1.6R105K	Electrolytic solid 1uF 16V	+-10%
C605 C606	17-5FF122J	Mylar 0.0012uF 50V	+-5%
C607 C608	17-5DF821K	Ceramic 820pF 50V	+-10%
C609 C610	17-5FF102J	Mylar 0.001uF 50V	+-5%
C611 C612	17-5DR470M	Ceramic 47pF 50V	+-20%
C613 C614	17-0.63EF108Y	Electrolytic 1000uF 6.3V	+50-10%
C615 C616	17-5FF102J	Mylar 0.001uF 50V	+-5%
C617 C618	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C619	17-6.3EF476Y	Electrolytic 47uF 63V	+50-10%
C621 C622	17-5DR101M	Ceramic 100pF 50V	+-20%
C623 C624	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C625 C626	17-5ER476Y	Electrolytic 47uF 50V	+50-10%
C627-C630	17-5DR470M	Ceramic 47pF 50V	+-20%
C631-C640	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C641	17-5ER106Y	Electrolytic 10uF 50V	+50-10%
C642 C643	17-1ER476Y	Eiectrolytic 47uF 10V	+50-10%
C644 C645	17-5ER476Y	Electrolytic 47uF 50V	+50-10%
C646	17-5ER474Y	Electrolytic 0.47uF 50V	+50-10%
C647	17-1ER226Y	Electrolytic 22uF 10V	+50-10%
C648 C649	17-5DR223Z	Ceramic 0.022uF 50V	+80-20%
C650 C651	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C652-C654	17-5DR101M	Ceramic 100pF 50V	+-20%
C801 C802	17-2.5ER476Y	Electrolytic 47uF 25V	+50-10%
C803 C804	17-5ER476Y	Electrolytic 47uF 50V	+50-10%
C805	17-5ER106Y	Electrolytic 10uF 50V	+50-10%
C806	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
C807 C808	17-5ER106Y	Electrolytic 10uF 50V	+50-10%
C809 C810	17-5DR220M	Ceramic 22pF 50V	+-20%
C811-C814	17-5ER476Y	Electrolytic 47uF 50V	+50-10%
C815 C816	17-6.3EG477Y	Electrolytic 470uF 63V	+50-10%
C817-C820	17-5P478Y	Electrolytic 4700uF 50V	+50-10%
C821	17-5ER105Y	Electrolytic 1uF 50V	+50-10%
C822	17-2014	Ceramic 4700pF 400V AC	KC
C823	17-2011	Ceramic 4700pF 125V AC	MY
^C824-C831	17-5FF103K	Mylar 0.01uF 50V	+-10%
C832	17-5DH104Z	Ceramic 0.1uF 50V	+80-20%
COILS			
L601 L602	29-1147	Air 1.2cx6.9(12.6)Dx30T	

Note: Delta ^ denotes for 7150 only

REF. NO.	PART NO.	DESCRIPTION	NOTE
VARIABLE RESISTORS			
VR501	29-4103A	16¢ 20KBx2/50KNMx2 P2KF25	
VR502 VR503	29-4075F	16¢ 10KCx2 P1K25	
VR601 VR602	29-4168	Semi 8¢ 500B Flat	
VR603 VR604	29-4170	Semi 8¢ 100B Flat	
DIODES			
D401-D412	30-1019-1	BAW62/BAW76	
D501 D502	30-1019-1	BAW62/BAW76	
D601-D612	30-1019-1	BAW62/BAW76	
D613 D614	30-1038	Zener 18V ½W RD18EB3	
D615	30-1002	Rectifier 100V 1A IN4002/10D1	
D801-D804	30-1002	Rectifier 100V 1A IN4002/10D1	
D805-D808	30-1017-1	Rectifier 100V 3A G3B	
D809	30-1002	Rectifier 100V 1A IN4002/10D1	
LEDS			
LD601	30-1085	Green LT3231G/X-253FG	
*LD602	30-1075	Red LT3211R/X-253FPR	
*LD801	30-1075	Red LT3211R/X-253FPR	
TRANSISTORS			
Q401 Q402	30-2096	BC556B	
Q403-Q406	30-2264	FET 2SK163L	
Q407 Q408	30-2085-2	BC559B	
Q409 Q410	30-2096	BC556B	
Q411-Q414	30-2090-2	BC546B	
Q415 Q416	30-2096	BC556B	
Q501 Q502	30-2090-2	BC546B	
Q503 Q504	30-2096	BC556B	
Q505	30-2090-2	BC546B	
Q506 Q507	30-2096	BC556B	
Q508	30-2090-2	BC546B	
Q509 Q510	30-2265	FET J111	
Q601 Q602	30-2096	BC556B	
Q603 Q604	30-2090-2	BC546B	
Q605 Q606	30-2238	BF423	
Q607-Q610	30-2260	2SD669C/2SD669D	
Q611 Q612	30-2259	2SB649C/2SB649D	
Q613 Q614	30-2260	2SD669C/2SD669D	
Q615 Q616	30-2305	2SC2921	
Q617 Q618	30-2304	2SA1215	
Q619 Q620	30-2090-2	BC546B	
Q621	30-2096	BC556B	
Q801	30-2260	2SD669C/2SD669D	
Q802	30-2096	BC556B	
Q803	30-2259	2SB649C/2SB649D	
Q804	30-2096	BC556B	
Q806	30-2259	2SB649C/2SB649D	

Note: Asterisk * denotes for 3150 only

7150 AUDIO/ 3150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
INTEGRATED CIRCUITS			
IC501	30-3179	Dual OP RC5532/NE5532	
IC701	30-3187	Protector TA7317P	
IC801	30-3178	Regulator M5231L	
IC802	30-3213	Regulator MC78M24CT/AN7824	
SWITCHES			
SW401	31-1228	Slide SSB23FL313	
SW402	31-1204	Rotary RZL45FL504	
SW403	31-1253	Switching Part ESA-26132	
	31-1261	Operating Part ESA-33446B	
SW404	31-1260	Slide SSB022NA01-FL	
SW501	31-1247	Push SUF32AE023-FL	
SW503 SW504	31-1247	Push SUF32AE023-FL	
SW502 SW505	31-1235	Push SUF22AA012-FL	
SW601 SW602	31-1226	Slide SSP22FL080	
SW603	31-1024F	Rotary SRZV044N37-FL	

7150 TUNER/4150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R001	16-¼CA563J	56K OHM	
R002	16-¼CA104J	100K OHM	
R003	16-¼CA101J	100 OHM	
R004	16-¼CA331J	330 OHM	
R005	16-¼CR330J	33 OHM	
R006	16-¼CA121J	120 OHM	
R007	15-¼CA563J	56K OHM	
R008	16-¼CA104J	100K OHM	
R009	16-¼CA563J	56K OHM	
R010	16-¼CA104J	100K OHM	
R011	16-¼CL101J	100 OHM	
R012	16-¼CA151J	150 OHM	
R013	16-¼CA121J	120 OHM	
R014	16-¼CA563J	56K OHM	
R015	16-¼CA104J	100K OHM	
R016	16-¼CA563J	56K OHM	
R017	16-¼CA333J	33K OHM	
R018	16-¼CA103J	10K OHM	
R019	16-¼CA222J	2K2 OHM	
R020	16-¼CA332J	3K3 OHM	
R021	16-¼CA431J	430 OHM	
R022	16-¼CA103J	10K OHM	
R023	16-¼CA682J	6K8 OHM	
R024	16-¼CR683J	68K OHM	
R025	16-¼CL154J	150K OHM	
R026	16-¼CA102J	1K OHM	
R027	16-¼CR222J	2K2 OHM	
R028	16-¼CA101J	100 OHM	
R101	16-¼CR681J	680 OHM	
R102	16-¼CR391J	390 OHM	
R103	16-¼CR470J	47 OHM	
R104	16-¼CA152J	1K5 OHM	
R105	16-¼CR471J	470 OHM	
R106	16-¼CA331J	330 OHM	
R107	16-¼CR391J	390 OHM	
R108	16-¼CR101J	100 OHM	
R109	16-¼CR391J	390 OHM	
R110	16-¼CR331J	330 OHM	
R111	16-¼CA330J	33 OHM	
R112	16-¼CR102J	1K OHM	
R113	16-¼CA103J	10K OHM	
R114	16-¼CR823J	82K OHM	
R115	16-¼CR101J	100 OHM	
R116	16-¼CR102J	1K OHM	
R118	16-¼CR331J	330 OHM	
R119	16-¼CR103J	10K OHM	
R120	16-¼CA820J	82 OHM	
R121	16-¼CL563J	56K OHM	
R122	16-¼CA221J	220 OHM	

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R123	16-¼CR473J	47K OHM	
R124	16-¼CR223J	22K OHM	
R125	16-¼CA183J	18K OHM	
R127	16-¼CA153J	15K OHM	
R128	16-¼CR103J	10K OHM	
R129 R130	16-¼CA683J	68K OHM	
R131	16-¼CR563J	56K OHM	
R132	16-¼CA333J	33K OHM	
R133	16-¼CA823J	82K OHM	
R134	16-¼CA100J	10 OHM	
R135	16-¼CR154J	150K OHM	
R136	16-¼CR473J	47K OHM	
R137	16-¼CA473J	47K OHM	
R138	16-¼CR224J	220K OHM	
R139	16-¼CA222J	2K2 OHM	
R140 R141	16-¼CA472J	4K7 OHM	
R142	16-¼CA103J	10K OHM	
R143	16-¼CA122J	1K2 OHM	
R144	16-¼CR333J	33k OHM	
R145	16-¼CA564J	560K OHM	
R146	16-¼CA223J	22K OHM	
R147-R149	16-¼CA102J	1K OHM	
R150 R151	16-¼CR103J	10K OHM	
R152	16-¼CR472J	4K7 OHM	
R153 R154	16-¼CR471J	470 OHM	
R156	16-¼CR331J	330 OHM	
R157	16-¼CA391J	390 OHM	
R158	16-¼CR470J	47 OHM	
R159	16-¼CA473J	47K OHM	
R160 R161	16-¼CR223J	22K OHM	
R162	16-¼CR272J	2K7 OHM	
R201	16-¼CA122J	1K2 OHM	
R202	16-¼CR102J	1K OHM	
R203	16-¼CA121J	120 OHM	
R204	16-¼CA682J	6K8 OHM	
R205	16-¼CR104J	100K OHM	
R206	16-¼CA103J	10K OHM	
R207 R208	16-¼CR222J	2K2 OHM	
R209 R210	16-¼CA183J	18K OHM	
R211 R212	16-¼CR333J	33K OHM	
R213-R216	16-¼CA332J	3K3 OHM	
R217	16-¼CA333J	33K OHM	
R218	16-¼CA103J	10K OHM	
R219 R220	16-¼CA823J	82K OHM	
R221 R222	16-¼CA155J	1M5 OHM	
R223	16-¼CA103J	10K OHM	
R224	16-¼CA102J	1K OHM	
R225	16-¼CA104J	100K OHM	

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R226	16-¼CA103J	10K OHM	
R227	16-¼CA102J	1K OHM	
R228-R230	16-¼CA473J	47K OHM	
R231	16-¼CA135J	15K OHM	
R232	16-¼CA473J	47K OHM	
R233	16-¼CA153J	15K OHM	
R234	16-¼CR103J	10K OHM	
R235	16-¼CR223J	22K OHM	
R236	16-¼CA103J	10K OHM	
R237	16-¼CA223J	22K OHM	
R238	16-¼CR472J	4K7 OHM	
R239	16-¼CR473J	47K OHM	
R240 R241	16-¼CA103J	10K OHM	
R242	16-¼CR223J	22K OHM	
R243	16-¼CA473J	47K OHM	
R244 R245	16-¼CA103J	10K OHM	
R246	16-¼CA473J	47K OHM	
R247	16-¼CR153J	15K OHM	
R248	16-¼CA223J	22K OHM	
R249	16-¼CA473J	47K OHM	
R250	16-¼CA153J	15K OHM	
R251	16-¼CA101J	100 OHM	
R252	16-¼CA472J	4K7 OHM	
R253	16-¼CA333J	33K OHM	
R254	16-¼CR103J	10K OHM	
R255	16-¼CA223J	22K OHM	
R256	16-¼CA101J	100 OHM	
R257 R258	16-¼CA564J	560K OHM	
R259 R260	16-¼CA104J	100K OHM	
R261	16-¼CA221J	220 OHM	
R262 R263	16-¼CA223J	22K OHM	
*R264 R265	16-¼CA471J	470 OHM	
*R266 R267	16-¼CR474J	470K OHM	
*R268 R269	16-¼CA185J	1M8 OHM	
*R270 R271	16-¼CR562J	5K6 OHM	
*R272-R275	16-¼C472J	4K7 OHM	
*R276 R277	16-¼CA332J	3K3 OHM	
R278	16-¼CR104J	100K OHM	
R279	16-¼CR334J	330K OHM	
R280	16-¼CA105J	1M OHM	
*R281 R282	16-¼CA224J	220K OHM	
*R283 R284	16-¼CA104J	100K OHM	
^R285 R286	16-¼CA224J	220K OHM	
*R287 R288	16-¼CA472J	4K7 OHM	
R301	16-¼CA103J	10K OHM	
R303	16-¼CA822J	8K2 OHM	
R304	16-¼CR271J	270 OHM	
R305	16-¼CA472J	4K7 OHM	
R306	16-¼CA103J	10K OHM	

Note:1.Asterisk * denotes for 4150 only 2.Delta ^denotes for 7150 only

7150 TUNER /4150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
RESISTORS (All are carbon film ¼W +-5% unless noted otherwise)			
R307	16-¼CA8222J	8K2 OHM	
R308	16-¼CA472J	4K7 OHM	
R309	16-¼CR271J	270 OHM	
R310	16-¼CA223J	22K OHM	
R311	16-¼CA103J	10K OHM	
R312 R313	16-¼CA104J	100K OHM	
R314	16-¼CA103J	10K OHM	
R315	16-¼CS223J	22K OHM	
R316	16-¼CS104J	100K OHM	
R317	16-¼CS822J	8K2 OHM	
R318	16-¼CS224J	220K OHM	
R319	16-¼CS103J	10K OHM	
R320	16-¼CS472J	4K7 OHM	
R321-R344	16-¼CS103J	10K OHM	
R345	16-¼CA154J	150K OHM	
R348-R350	16-¼CS103J	10K OHM	
R352	16-¼CS103J	10K OHM	
R701 R702	16-¼CA104J	100K OHM	
R704	16-¼CA221J	220 OHM	
R705	16-¼CA103J	10K OHM	
R706	16-¼CA823J	82K OHM	
R707	16-¼CA103J	10K OHM	
R708	16-¼CA152J	1K5 OHM	
R709	16-¼CR221J	220 OHM	
R710	16-¼CA102J	1K OHM	
R711	16-¼CA332J	3K3 OHM	
R712	16-¼CA273J	27K OHM	
R713	16-¼CA121J	120 OHM	
R714	16-¼CR471J	470 OHM	
R715	16-¼CA473J	47K OHM	
R716 R717	16-¼CA103J	10K OHM	
R718	16-¼CR223J	22K OHM	
R719	16-¼CA103J	10K OHM	
R720	16-¼CA101J	100 OHM	
R721	16-¼CA103J	10K OHM	
R722	16-¼CA223J	22K OHM	
R723	16-¼CA154J	150K OHM	
R724	16-¼CA122J	1K2 OHM	
R752	16-¼CA561J	560 OHM	
R726	16-¼CA104J	100K OHM	
R901	16-¼A100J	10 OHM	
R902 R903	16-¼CA561J	560 OHM	
R904	16-¼CN101J	100 OHM	
R905	16-¼CA102J	1K OHM	
R906	16-¼CN101J	100 OHM	
R907	16-¼CA102J	1K OHM	
R908	16-¼CN271J	270 OHM	
R909	16-¼CA152J	1K5 OHM	
R910	16-¼CA151J	150 OHM	

REF. NO.	PART NO.	DESCRIPTION	NOET
CAPACITORS			
C001	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C002	17-5DF223Z	Ceramic 0.022uF 50V +80-20%	
C003	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C004 C005	17-5DF223Z	Ceramic 0.022uF 50V +80-20%	
C006 C007	17-5DR2R0DPH	Ceramic 2pF 50V +-0.5pF pH	
C008	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C009	17-5DR2R0DPH	Ceramic 2pF 50V +-0.5pF pH	
C010	17-5DF331JRH	Ceramic 330pF 50V +-5% RH	
C011	17-5DF102M	Ceramic 0.001uF 50V +-20%	
C012	17-5DR2R0DPH	Ceramic 2pF 50V +-0.5pF pH	
C013	17-5DR3R0DPH	Ceramic 3pF 50V +-0.5pF pH	
C014	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C015	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C016	17-5DR3R0DPH	Ceramic 3pF 50V +-0.5pF pH	
C017	17-5DR2R0DPH	Ceramic 2pF 50V +-0.5pF pH	
C018	17-5DF100FSH	Ceramic 10pF 50V +-1pF SH	
C019	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C020	17-5DF150KCH	Ceramic 15pF 50V +-10% CH	
C021	17-5DR100FPH	Ceramic 10pF 50V +-1pF pH	
C022	17-5DR5R0DCH	Ceramic 5pF 50V +-0.5pF CH	
C023	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C024 C025	17-5DR102Z	Ceramic 0.001uF 50V +80-20%	
C026	17-5DF330KCH	Ceramic 33pF 50V +-10% CH	
C027	17-5DF121M	Ceramic 120pF 50V +-20%	
C028 C029	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C030-C033	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C034	17-5DR3R0DPH	Ceramic 3pF 50V +-0.5pF pH	
C035	17-5DR100F	Ceramic 10pF 50V +-1pF	
C036	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C037	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C038	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C039	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C101	17-5DF223Z	Ceramic 0.022uF 50V +80-20%	
C102	17-5DR222Z	Ceramic 0.002uF 50V +80-20%	
C103 C104	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C105	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C106-C109	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C110	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C111	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C112-C118	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C119	17-1.6DR107Y	Ceramic 100uF 16V +50-10%	
C120	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C121	17-5ER105Y	Ceramic 1uF 50V +50-10%	
C122 C123	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C124	17-1.6ER476Y	Ceramic 47uF 16V +50-10%	
C125	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C126	17-1.6DR476Y	Ceramic 47uF 16V +50-10%	
C127	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C128	17-5DR181KCH	Ceramic 180pF 50V +-10% CH	

REF. NO.	PART NO.	DESCRIPTION	NOTE
CAPACITORS			
C129	17-5DR220KUJ	Ceramic 22pF 50V +-10% UJ	
C130	17-5DR3R0DSL	Ceramic 3pF 50V +-0.5pF SL	
C131-C133	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C134	17-5DR105Y	Ceramic 1uF 50V +50-10%	
C135	17-5DR471M	Ceramic 470pF 50V +-20%	
C137 C138	17-1.6DR106Y	Electrolytic 10uF 16V +50-10%	
C139	17-5FR473J	Mylar 0.047uF 50V +-5%	
C140	17-5DR225Y	Electrolytic 2.2uF 50V +50-10%	
C141	17-5FR102J	Mylar 1000pF 50V +-5%	
C142	17-5FR223J	Mylar 0.022uF 50V +-5%	
C143	17-5FH224J	Mylar 0.22uF 50V +-5%	
C144	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C145	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C146	17-5DF100FUJ	Ceramic 10pF 50V +-1pF UJ	
C201	17-5ER105Y	Electrolytic 1uF 50V +50-10%	
C202	17-5FR473J	Mylar 0.047uF 50V +-5%	
C204	17-1.60335M	Tantalun 3.3uF 16V +-20%	
C205	17-1.60105M	Tantalun 1uF 16V +-20%	
C207	17-1.60335M	Tantalun 3.3uF 16V +-20%	
C208	17-1.6EF227Y	Electrolytic 220uF 16V +50-10%	
C209 C210	17-1.6ER226Y	Electrolytic 22uF 16V +50-10%	
C211 C212	17-5FR152J	Mylar 0.0015uF 50V +-5%	
C215 C216	17-5ER475Y	Electrolytic 4.7uF 50V +50-10%	
C217	17-5ER105Y	Electrolytic 1uF 50V +50-10%	
C218 C219	17-5FR103J	Mylar 0.01uF 50V +-5%	
C220	17-5ER474Y	Electrolytic 0.47uF 50V +50-10%	
C221	17-1.6ER226Y	Electrolytic 22uF 16V +50-10%	
C222	17-1.6ER476Y	Electrolytic 47uF 16V +50-10%	
C223 C224	17-5ER475Y	Electrolytic 4.7uF 50V +50-10%	
C225	17-1.6ER476Y	Electrolytic 47uF 16V +50-10%	
C226	17-1.5ER106Y	Electrolytic 10uF 16V +50-10%	
C227	17-5DR470M	Ceramic 47pF 50V +-20%	
*C228 C229	17-5ER105Y	Electrolytic 1uF 50V +50-10%	
*C230 C231	17-1.6ER106Y	Electrolytic 10uF 16V +50-10%	
*C232 C233	17-5ER475Y	Electrolytic 4.7 50V +50-10%	
C234	17-5ER475Y	Electrolytic 4.7uF 50V +50-10%	
C235	17-5FR123J	Mylar 0.012uF 50V +-5%	
C236	17-5FR223J	Mylar 0.022uF 50V +-5%	
C301	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C302-C304	17-5DR103M	Ceramic 0.01uF 50V +-20%	
C305	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C306	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C307 C308	17-1.60224M	Tantalun 0.22uF 16V +-20%	
C309 C310	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C311	17-0.63EG478Y	Electrolytic 4700uF 6.3V +50-10%	
C312	17-5DR5R0D	Ceramic 5pF 50V +-0.5pF	
C313	17-5DR390M	Ceramic 39pF 50V +-20%	
C314	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C315	17-1.60105M	Tantalun 1uF 16V +-20%	

Note: Asterisk * denotes for 4150 only

REF. NO.	PART NO.	DESCRIPTION	NOTE
CAPACITORS			
C316	17-5DR473Z	Electrolytic 0.47uF 50V +80-20%	
C317	17-5DR470M	Ceramic 47pF 50V +-20%	
C701	17-5DR223Z	Ceramic 0.022uF 50V +-1pF	
C702	17-5DR100F	Ceramic 10pF 50V +-1pF	
C703	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C705	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C706	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C707	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C708	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C709	17-5ER475Y	Electrolytic 4.7uF 50V +50-10%	
C710	17-5DR473Z	Ceramic 0.047uF 50V +80-20%	
C711	17-5ER474Y	Electrolytic 0.47uF 50V +50-10%	
C712	17-5ER335Y	Electrolytic 3.3uF 50V +50-10%	
C713	17-5DR103M	Ceramic 0.01uF 50V +-20%	
C714	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C715	17-1.6ER107Y	Electrolytic 100uF 16V +50-10%	
C716	17-5FR333J	Mylar 0.033uF 50V +-5%	
C717	17-5FR222J	Mylar 0.0022uF 50V +-5%	
C718	17-1.6EF227Y	Electrolytic 220uF 16V +50-10%	
C719	17-5DR102M	Ceramic 0.001uF 50V +-20%	
C720	17-5DR223Z	Ceramic 0.022uF 50V +80-20%	
C721	17-5FF104J	Mylar 0.1uF 50V +-5%	
C722	17-5ER475Y	Electrolytic 4.7uF 50V +50-10%	
C901	17-3.5EG228Y	Electrolytic 2200uF 35V +50-10%	
C902	17-2.5EF107Y	Electrolytic 100uF 25V +50-10%	
C903 C904	17-1.6DF107Y	Electrolytic 100uF 16V +50-10%	
C905	17-3.5DF477Y	Electrolytic 470uF 35V +50-10%	
C906 C907	17-1.6DR107Y	Electrolytic 100uF 16V +50-10%	
C908 C909	17-3.5DF477Y	Electrolytic 470uF 35V +50-10%	
C910	17-3.5DR106Y	Electrolytic 10uF 35V +50-10%	
C912 C913	17-0.63DR107Y	Electrolytic 100uF 6.3V+50-10%	
VARIABLE RESISTORS			
VR101	29-4184	SEMI 8¢ 20KB FLAT	
VR102	29-4156	SEMI 8¢ 100KB FLAT	
VR103	29-4163	SEMI 8¢ 50KB FLAT	
VR201	29-4165	SEMI 8¢ 5KB FLAT	
VR202	29-4156	SEMI 8¢ 100KB FLAT	
VR701	29-4184	SEMI 8¢ 20KB FLAT	
*VR203	29-4181	GM80R00434-FL(50KBX2)	
DIODES			
D001-C006	30-1082*A	BB204G	
D101 D102	30-1010	1N60	
D103	30-1127	VARI CAP BB109G	
D104 D105	30-1152TA	1N4148	

Note: Asterisk * denotes for 4150 only

7150 TUNER/4150 ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
DIODES			
D106	30-1010	1N60	
D107 D108	30-1152TA	1N4148	
D201-D208	30-1152TA	1N4148	
D209	30-1010	1N60	
D201	30-1077-1	ZENER HZ5A-3	
D211 D212	30-1152TA	1N4148	
D214	30-1152TA	1N4148	
D301-D303	30-1152TA	1N4148	
D701 D702	30-1146	Variable capacitor SVC333B	
D703-D705	30-1152TA	1N4148	
D901-D908	30-1002	Rectifier 100V1A 1N4002/10D1	
D909 D910	30-1044-1	ZENER HZ15-2	
D911	30-1147-1	ZENER HZ30-2	
D912	30-1136-1	ZENER HZ7A-2	
INTEGRATED CIRCUITS			
IC101	30-3155	FM IF UPC1163H	
IC102	30-3206	FM IF LA1235N	
IC103	30-3118	DUAL OP MC34002P	
IC104	30-3069	DUAL OP RC4558/UPC4558N	
IC105	30-3205	DUAL OP NE5517N/LM1360ON	
IC201	30-3079	MPX HA12016	
IC202	30-3069	DUAL OP RC4558/UPC4558N	
IC203	30-3051	METER DRIVER BA656	
IC301	30-3148	PLL+CONTROLLER TC9137P	
IC302	30-3149	PRECALLER TD6104P	
IC303	30-3050	DISPLAY DRIVER TD6301P	
TRANSISTORS			
Q001-Q003	30-2201*A	FET J310	
Q004 Q005	30-2197*B	2N5770	
Q006	30-2201*A	FET J310	
Q007	30-2267*A	FET 2N5486	
Q101 Q102	30-2201*A	FET J310	
Q103	30-2019	2SC930	
Q104	30-2156	2SC1815GR	
Q105 Q106	30-2019	2SC930	
Q201-Q208	30-2156	2SC1815GR	
Q209	30-2171	2SA733A	
Q210 Q211	30-2265	FET J111	
*Q212 Q213	30-2084-3	BC549C	
*Q214 Q215	30-2096	BC556B	
Q216	30-2267*A	FET 2N5486	
Q301	30-2156	2SC1815GR	
Q302	30-2161	FET K40	
Q303	30-2156	2SC1115GR	
Q304	30-2161	FET K40	
Q305	30-2156	2SC1815GR	

Note: Asterisk * denotes for 4150 only

REF. NO.	PART NO.	DESCRIPTION	NOTE
TRANSISTORS			
Q306-Q308	30-2255	2SC2785	
Q701 Q702	30-2156	2SC1815GR	
Q703	30-2084-3	BC549C	
Q901	30-2078	2SD330E	
Q902	30-2171	2SA733A	
Q903 Q904	30-2090-2	BC546B	

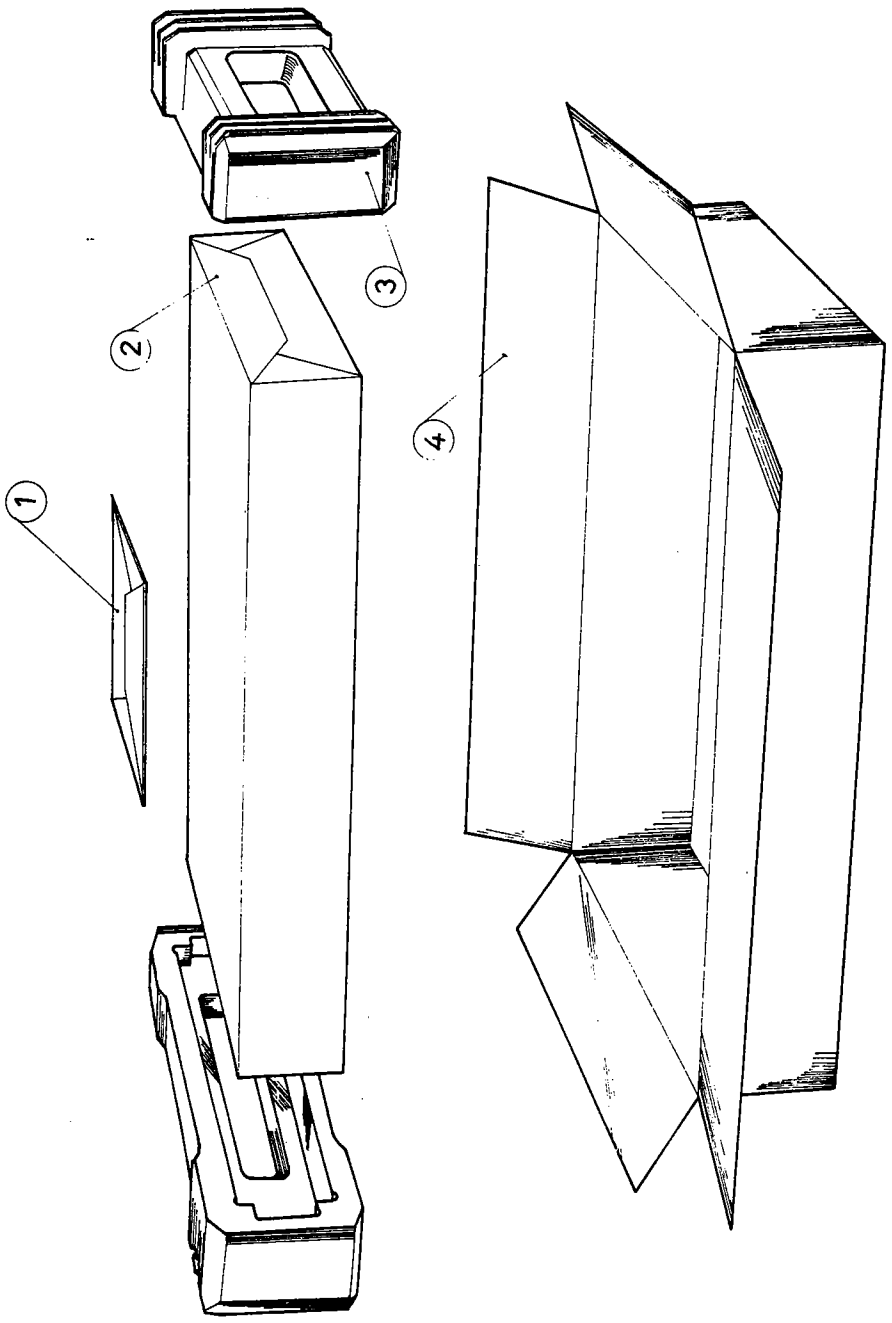
7150 AUDIO/2150/3150 CRITICAL COMPONENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	NOTE
Switched Unswitched	12-2121	AC Outlet AB/C1/C2/LC/U1-U4 Version	
	14-5013	Power Cord E3 Version	
	14-5025	Power Cord E2 Version	
	14-5032	Power Cord U3 Version	
	14-5033	Power Cord E1/ET/E4/U2/U4	
	14-5037*B	Power Cord C1/C2/LC/U1/AB	
C822 C823	17-2011	Capacitor AB/E1-E4/ET/U1-U4 Version	
C823	17-2014	Capacitor C1/C2/LC Version	
	29-2072-1	Transformer C1/LC Version	
	29-2072-1A	Transformer C1/LC Version	
	29-2072-4	Transformer C2 Version	
	29-2072-4A	Transformer C2 Version	
	29-2072-5	Transformer E1/ET Version	
	29-2072-5A	Transformer E1/ET Version	
	29-2072-7	Transformer E2/E3/E4/U3/U4 Version	
	29-2072-7A	Transformer E2/E3/E4/U3/U4 Version	
	29-2072-8	Transformer AB/U1/U2 Version	
	29-2072-8A	Transformer AB/U1/U2 Version	
SW802a SW802b	31-1129A*A	Switch AB/E1-E4/ET/U1-U4 Version	
SW802a	31-1130A*A	Switch C1/C2/LC Version	
F6	32-14001W	Fuse 4A 250V Nomal AB/C1/C2/LC/U1 Version	
F6	32-12001S	Fuse 2A 250V Time-lag E1-E4/ET/U2-U4 Version	

4150/7150 TUNER CRITICAL COMPONENT PARTS LIST

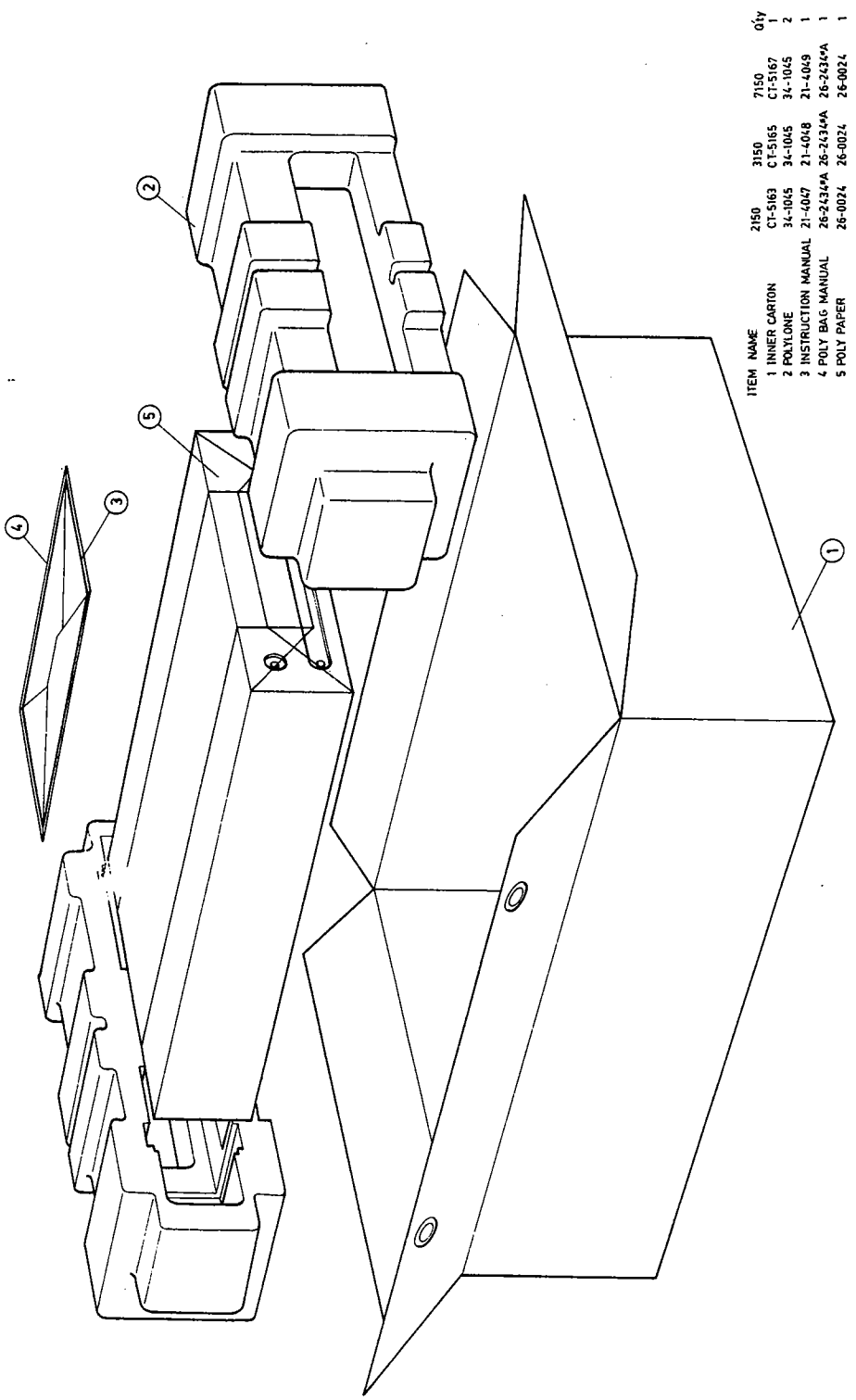
REF. NO.	PART NO.	DESCRIPTION	NOTE
	14-5013	Power Cord E3 Version	
	14-5025	Power Cord E2 Version	
	14-5032	Power Cord U3 Version	
	14-5033	Power Cord E1/ET/E4/U2/U4 Version	
	14-5037*B	Power Cord C1/C2/LC/U1/AB	
	17-2011	Capacitor AB/E1-E4/ET/U1-U4 Version	
	17-2014	Capacitor C1/C2/LC Version	
	29-2070-1	Transformer C1/LC Version	
	29-2070-4	Transformer C2 Version	
	29-2070-5	Transformer E1/ET Version	
	29-2070-7	Transformer E2/E3/E4/U3/U4 Version	
	29-2070-8	Transformer AB/U1/U2 Version	
	31-1129A*A	Switch AB/E1-E4/ET/U1-U4 Version	
	31-1130A*A	Switch C1/C2/LC Version	
F1 F2 F3	32-15000U	Fuse 500mA 250V Normal AB/C1/C2/LC/U1 Version	
F1 F2 F3	32-15000S	Fuse 500mA 250V Time-lag E1-E4/ET/U2-U4 Version	

2150/3150/7150 PACKING DIAGRAM



ITEM NUMBER	NAME	Qty
1. 26-2434	MANUALS POLY BAG	1
2. 26-0005	POLY PAPER	1
3. 34-1044	POLYLONE	2
4. CT-5161	INNER CARTON	1

4150 PACKING DIAGRAM



ITEM	NAME	2150	3150	7150	Qty
1	INNER CARTON	CT-5163	CT-5165	CT-5167	1
2	POLYLONE	34-1045	34-1045	34-1045	2
3	INSTRUCTION MANUAL	21-4047	21-4048	21-4049	1
4	POLY BAG MANUAL	26-2434*A	26-2434*A	26-2434*A	1
5	POLY PAPER	26-0024	26-0024	26-0024	1

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